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**Exploration of the Correlation  
Structure of a Survey for Evaluating  
Airline Safety Culture**

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**Technical Report AHFD-04-06/FAA-04-3**

**June 2004**

**Prepared for**

**Federal Aviation Administration  
Atlantic City International Airport, NJ**

**Contract DTFA 01-G-015**

## ABSTRACT

This paper describes the validation effort, using factor analysis, of a safety culture survey for aviation operations based on the five-factor model suggested by Wiegmann, Zhang, von Thaden, Sharma, and Mitchell (2002). The original model did not fit as well as hypothesized, so further analyses were conducted to identify specific areas of misalignment. Results from these analyses and respondent comments informed a conceptual revision of the survey, which suggests that a hierarchical model containing four main factors and eleven subfactors may be more appropriate. Issues identified include the need to account for the atypical structure of management-employee relationships in airlines. A revised version of the survey, following the revised model, is presented.

## INTRODUCTION

Over the past several years, organizations in high-risk industries have become increasingly aware of the role organizational culture plays in determining safe performance. Several prominent accidents, including the Chernobyl disaster, the Challenger explosion, and the recent Columbia tragedy have been attributed at least in part to the lack of a strong safety-focused culture (e.g., Columbia Accident Investigation Board, 2003; Cox & Flin, 1998; Mearns & Flin, 1998; Pidgeon, 1998; Vaughan, 1996). As a result, organizational safety culture has been studied in a wide variety of industries ranging from manufacturing and construction (Dedobbeleer & Beland, 1991; Janssens, Brett, & Smith, 1995; Zohar, 2000) to power generation (Yule, Flin, & Murdy, 2001). In particular, the aviation industry has displayed a strong interest in organizational safety, precipitated by the role attributed to safety culture in the crash of Continental Express Flight 2574 in 1991 (National Transportation Safety Board, 1992, as cited in Meshkati, 1997).

The extensive interest in safety culture, however, has given rise to widespread definitions and measures of the construct as well, thus safety culture research findings remain difficult to interpret (Pidgeon, 1998). Furthermore, only a handful of the numerous safety culture studies have been conducted in the context of aviation (cf. Wiegmann, Zhang, & von Thaden, 2001). Wiegmann, Zhang, von Thaden, Sharma, and Mitchell (2002) conducted a review and synthesis of the available literature in an attempt to derive a common definition of safety culture that would prove applicable to aviation. Based on the similarities among existing definitions, safety culture is consistently defined as a group- or organizational-level construct with the following properties:

- Shared values or perceptions of a group of people about safety within that group;
- Concerned with the formal safety-related processes and procedures of the organization;
- Includes the contributions of members at every level within the organization;
- Is evident in the organization's desire to learn and improve with regard to safety; and
- Is a reasonably stable, not transitory, feature of an organization.

By this definition, safety culture is situated on a continuum and can be improved; it is possible for a negative safety culture to exist, but not possible for there to exist no safety culture at all.

Wiegmann et al. (2002) also note five commonly described indicators of positive safety culture. First, the reward or accountability dimension ("accountability system") of the organization must be set up in such a way that safe behavior is rewarded and unsafe behavior is punished. Second, front-line and middle management should actively promote safety ("management involvement"). Third, employees (pilots, in the case of aviation) should be empowered to improve and maintain safety and be motivated to do so ("pilot empowerment"). Fourth, the organization should possess an accessible system to report information that affects safe operations ("reporting system"). Employees should be comfortable with this system and willing to use it. Finally, the organization must demonstrate commitment to safety at the highest levels through the implementation of policies that promote safety and the allocation of resources

(e.g., training, equipment, delays as necessary to alleviate a problem) to safety (“organizational commitment”). We refer to these five dimensions throughout this paper as the five-factor model of safety culture.

### *Present Research*

We designed a survey to measure safety culture within the context of airline flight operations following the five-dimensional model of organizational safety culture (Wiegmann, et al., 2002)<sup>1</sup>. The intent of this survey serves two purposes: (1) to provide a diagnostic tool to assess the current state of safety culture within a given airline and (2) to provide the basis for empirical validation of the five-dimensional model. The survey has primarily succeeded in fulfilling the first objective. Two airlines – one Part 135 passenger operation and one Part 121 cargo operation – have received detailed feedback about their airline’s safety culture as a result of completing the survey (cf. Wiegmann et al., 2003). However, the small numbers of respondents from those airlines precluded any tests of the second objective. Unless the model on which the survey is based can be shown to be valid, the diagnostic value of the survey remains questionable. The ensuing factor analysis seeks to evaluate whether the data supports the five-factor model of safety culture and to explore whether the survey requires modification for future implementation. Based on the previous work, reported here, the expected model is that of five correlated factors, distinct yet related as a consequence of shared organizational conditions and experiences.

## METHOD

### *Survey Instrument*

Eighty nine items comprise the safety culture survey as follows: ten items measure Accountability System, seventeen measure Management Involvement, thirty-one measure Organizational Commitment, fourteen measure Pilot Empowerment, and thirteen measure Reporting System. The items in their initial grouping appear in Table 1. These items occur within the survey in random order. Four additional items assess pilots’ perceptions of risk at their airline. Two of these items ask about the likelihood of an accident or incident occurring at the airline, the other two items ask about the likelihood of the respondent’s personal involvement in an accident or incident. A seven-point Likert-type scale measures the participants’ responses, where 1 = “Strongly Disagree,” 4 = “Neither Agree nor Disagree,” and 7 = “Strongly Agree,” with only those three points labeled. Space for respondents to write comments is provided next to each item and a “General Comments” section is included at the end of the survey. A brief demographic section has also been included, in which participants are asked to indicate their position (pilot or management), tenure with the company, tenure in their present position, age, type of aircraft flown for the company, and whether they have ever reported a safety problem at their present airline.

1 A detailed description of the development of the survey can be found in Wiegmann, von Thaden, Mitchell, Sharma, and Zhang (2003).



**Table 1. Items in Original Subscales**

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**Accountability System**

- 7. Being involved in an accident or incident, even if it was not your fault, would have an adverse effect on your career with this airline (R)
- 15. Airline management shows favoritism to certain pilots (R)
- 23. Pilots who cause accidents or incidents are not consistently held accountable for their actions (R)
- 29. Standards of accountability are consistently applied to all pilots in this airline
- 31. Pilots are consistently held accountable for acting unsafely, even if their actions saved time or money
- 37. Being the cause of an accident or incident would have an adverse effect on your reputation with fellow pilots
- 40. Action is consistently taken against pilots who violate safety procedures or rules
- 49. Pilots get little recognition for new safety ideas (R)
- 61. Being involved in an accident or incident, even if it was not your fault, has an adverse effect on your reputation with fellow pilots (R)
- 80. When pilots make a mistake or do something wrong, they are dealt with fairly by the airline

**Management Involvement**

- 1. Management involvement in safety issues has a high priority at my airline
- 6. My airline only keeps track of major safety problems and overlooks routine ones (R)
- 13. Flight Management closely monitors proficiency and currency standards to ensure pilots are qualified to fly their assigned flights
- 14. My airline's safety department is doing a good job
- 21. Upper level management gets personally involved in safety activities
- 22. Safety standards are seldom discussed openly (R)
- 30. Management is receptive to learning about safety concerns
- 39. Management has a clear understanding of risks associated with flight operations
- 42. Management often fails to recognize when pilots are flying unsafely (R)
- 51. Results of FAA safety inspections are made available to pilots for review and information
- 54. Safety issues are assigned high priority in meetings at this airline
- 59. Management stops unsafe operations or activities
- 60. Chief pilots do not hesitate to contact pilots to discuss safety issues
- 68. Pilots are kept informed of any changes that affect safety
- 76. Chief pilots are unavailable when pilots need help (R)
- 81. There are good communications here about safety
- 84. As long as there is no accident, management doesn't care how the flight operations are performed (R)

**Organizational Commitment**

- 3. I am confident that maintenance on aircraft is adequately performed and that aircraft are safe to operate
- 5. Training focuses more on minimum requirements for a check ride than on safety (R)
- 10. Mgt doesn't show much concern for safety until there is an accident or incident (R)
- 11. Safety is identified as a core value in my airline
- 12. Checklists and procedures are easy to understand
- 18. Management expects pilots to push the weather (R)
- 19. Following safety procedures is consistently expected
- 20. My airline's manuals are up to date
- 26. Safety works until we are busy (R)
- 27. Management tries to get around safety requirements whenever they get a chance (R)
- 28. Management is willing to invest money and effort to improve safety
- 33. My airline is more concerned with making money than being safe (R)
- 35. Training practices at my airline are centered around safety
- 38. Management views regulation violations very seriously, even when they don't result in any serious damage
- 45. Personnel responsible for safety hold a high status in my airline
- 46. My airline inappropriately uses the MEL (e.g. illegally, use when it would be better to fix aircraft) (R)
- 50. Safety is always discussed during training at my airline

- 56. Management's view is that not all accidents are preventable (R)
- 57. Management views FARs as a hindrance (R)
- 58. Safety is emphasized by my airline during the interview and orientation process
- 65. It is hard for pilots here to maintain a consistent sleep schedule (R)
- 66. My airline does all it can to prevent accidents or incidents.
- 69. When an accident occurs, management always blames the pilot (R)
- 72. Management is committed to equipping aircraft with up-to-date technology
- 73. Pilots who are not feeling well or are tired are encouraged not to fly
- 75. Management expects pilots to push for on time performance, even if it means compromising safety (R)
- 78. When it comes down to it, people in this airline would rather take a chance with safety than cancel a flight (R)
- 79. Personnel responsible safety have authority to implement changes
- 82. Some safety procedures/rules are not really practical (R)
- 83. My airline does not cut corners where safety is concerned

### **Pilot Empowerment**

- 4. Pilots are seldom asked for input when airline procedures are developed or changed (R)
- 8. Pilots are actively involved in identifying and resolving safety concerns
- 16. The best pilots in the group expect other pilots to behave safely
- 24. Management ensures that all pilots are responsible and accountable for safe flight operations
- 32. Pilots are given sufficient opportunities to make suggestions regarding safety issues
- 36. Pilots do all they can to prevent accidents
- 41. Pilots look at the airline's safety record as their own and take pride in it
- 43. My airline rarely questions pilot's decision to turn around due to weather
- 47. Pilots who violate safety regulations upset other pilots even when no harm has resulted
- 53. I am encouraged to stop flight related activities that are unsafe
- 62. Peer influence is effective at discouraging violations of operating procedures and flying regulations
- 63. Pilots try to get around safety requirements whenever they get a chance (R)
- 70. It is important to fly safely if I am to keep the respect of other pilots in my airline
- 77. Pilots often encourage one another to work safely

### **Reporting System**

- 2. I am familiar with the system for formally reporting safety issues with my airline
  - 9. Pilots are willing to report information regarding safety violations, marginal aviator performance, and other unsafe behavior
  - 17. Safety issues raised by pilots are communicated regularly to all pilots in the airline
  - 25. This airline's safety program includes mechanisms for me to report safety deficiencies
  - 34. Pilots do not report their own mistakes when they are not obvious (R)
  - 44. Pilots often cover up a hard landing or a close call if they feel they can get away with it (R)
  - 48. It is best to remain anonymous when reporting an unsafe condition or incident (R)
  - 52. When a pilot reports a safety problem, management acts quickly to correct safety issues
  - 55. Pilots who raise safety concerns are seen as troublemakers (R)
  - 64. Pilots can report safety discrepancies without the fear of negative repercussions
  - 67. Pilots who admit errors make a big mistake (R)
  - 71. There is no point in reporting a near miss (R)
  - 74. I am satisfied with the way this airline deals with safety reports
- 

(R) indicates a reverse coded item for analysis; that is, it represents a negative safety culture.

### *Participants and Procedure*

The present analysis uses data from a large nationwide Part 121 carrier based in the U. S. servicing destinations across North America. The airline presently enjoys a strong safety record, in which management takes considerable pride. Airline management agreed to participate in the anonymous safety culture survey in exchange for feedback based on survey results. Surveys were distributed to pilots through the airline's mail system. Each survey included a cover letter from the airline, explaining the purpose of the study and encouraging participation. A stamped addressed envelope was also included for respondents to return the surveys directly and anonymously to the University of Illinois' Aviation Human Factors Division. Participation in the survey was voluntary and respondents received no compensation for their participation in the survey. One thousand seven hundred twenty five surveys were distributed; of these, 503 (29%) were returned, all in usable condition. Nearly all respondents were pilots (99%), with 73% between the ages of 31 and 50. Most respondents (70%) had been at the airline for at least five years and many (57%) had at least five years' experience in their current position.

## RESULTS AND DISCUSSION

### *Measurement Model*

We tested the five-factor model with a confirmatory factor analysis in the structural equations modeling software package Mx (Neale, 2002). Item 37 ("Being the cause of an accident or incident would have an adverse effect on your reputation with fellow pilots") was removed from the data set before analysis due to several negative correlations with other items in the same subscale. Upon examination, this item provides an inconsistent effect among respondents regarding safety culture (e.g., a culture of accountability, or a cohesive group of pilots that encourage learning from mistakes, etc.).

The initial five-factor model, allowing correlated factors, did not yield a good fit to the data ( $\chi^2_{3310} = 7879.94, p < .001$ ; RMSEA = .06). Bentler and Bonett's (1980; cited by Xie, 2002) normed fit index was .58, Tucker and Lewis' (1973; cited by Xie, 2002) index was .69, and McDonald and Marsh's (1990; cited by Xie, 2002) relative non-centrality index was .70 (see Table 2). Models are generally considered to show good fit when these indices are at least .90 (McDonald & Ho, 2002). None of the fit indices for the five-factor model met conventional criteria for acceptable fit, with the exception of the root mean square error of approximation (RMSEA), which is considered "good" at values of .05 and below and "acceptable" if less than .08. Examination of the residual matrix showed that 489 (or 14%) of the 3486 residual correlations had an absolute value greater than or equal to .10; 160 (5%) were greater than .15. Overall, this information reflects a considerable amount of misfit of the model as originally structured, suggesting that additional factors or an alternate specification of the model may be necessary to describe the relationships between items.

**Table 2. Fit Indices for the Five-Factor and Nine-Factor Models**

Five-Factor Model		Revised Nine-Factor Model	
$\chi^2$	7879.95	$\chi^2$	3757.77
df	3310	df	1980
RMSEA	.06	RMSEA	.05
Null Model $\chi^2$ (comparison)	18711.52	Null Model $\chi^2$ (comparison)	13835.50
Null Model df	3403	Null Model df	2080
Normed Fit Index	.58	Normed Fit Index	.73
Tucker-Lewis Index	.69	Tucker-Lewis Index	.84
Relative Non-Centrality Index	.70	Relative Non-Centrality Index	.85

### *First Revisions*

To identify the areas of misfit more specifically, we analyzed each of the five subscales separately. A single-factor model was fit to each subscale to determine whether the items in that scale represent a single unidimensional construct or whether additional factors might be needed. Residual matrices (i.e., discrepancies between the actual correlation matrix and the correlation matrix predicted by the model) were examined along with the item text to identify problematic items or item relationships. We deleted items appearing confusing or ambiguous, along with regrouping items that share both large residuals and a logical connection into new factors. Details of this process for each subscale are given below.

*Accountability system scale.* A single-factor model poorly fit the correlation matrix of the original ten accountability system items,  $\chi^2_{27} = 220.54, p < .001$ ; RMSEA = .12, with 8 of 45 residuals (18%) greater than .10. Most of the residuals relate to items 7 and 23. Item 7 (“Being involved in an accident or incident, even if it was not your fault, would have an adverse effect on your career with this airline.”) appears ambiguous – it is not clear whether endorsing this item corresponds to a positive or a negative safety culture. This item was deleted from further analysis. Item 23 (“Pilots who cause accidents or incidents are not consistently held accountable for their actions.”) seems to have considerable conceptual overlap with items 29, 31 and 40 – all share the word “consistently” and refer to the same general concept of consistent consequences for unsafe behavior. Separating these four items (23, 29, 31, and 40) from the others to form a two-factor model improves the fit substantially ( $\chi^2_{19} = 98.82, p < .001$ ; RMSEA = .09). This fit is still unsatisfactory, however, and several residuals greater than .10 remain. Most of these residuals appear related to item 23, resulting in the item’s deletion. Deleting items 7, 23, and 37, leaves seven items remaining in the scale. This grouping yields a somewhat better fit, ( $\chi^2_{14} = 88.51, p < .001$ ; RMSEA = .11), but two large residuals linger, both associated with item 40. As mentioned before, item 40 appears to share many features with other items, but these items do not fit as a second factor. Deleting item 40 leaves items 29 and 31 in the “consistently” group, and these appear different from one another – item 29 refers to general standards of accountability, and item 31 refers specifically to unsafe actions in particular circumstances. The

six-item scale, containing items 15, 29, 31, 49, 61, and 80, produces a tolerable fit ( $X^2_9 = 27.11$ ,  $p = .001$ ; RMSEA = .06), with no residuals greater than .10.

*Management involvement scale.* A single-factor model of the seventeen management involvement scale items yields a poor fit to the correlation matrix ( $X^2_{119} = 366.48$ ,  $p < .001$ ; RMSEA = .07), with only five residuals greater than .10. Item 13 (“Management closely monitors proficiency and currency standards to ensure pilots are qualified to fly their assigned flights”) creates large residuals with other items that make no conceptual sense (items 14 and 21). It is not clear whether this item actually describes common airline practice – respondent comments on several items indicated that many pilots considered “flight management” or “management” to be ambiguous. Items 60 and 76 appeared to constitute a doublet factor. Doublet factors occur when two items are much more similar to each other than to the other items in the scale, usually due to strong similarities in item content or wording (McDonald, 1999). Such items have more variance in common than the other items, suggesting that they should load on a separate factor. However, factors with only two items are usually unstable and difficult to estimate (McDonald, 1999). As the items in doublet factors usually reflect very similar content, deleting one of the items often restores stability to the model. In the case of items 60 and 76, these items share a common reference to “chief pilots,” that is not present in any other items. Similarly, items 68 and 81 both refer to communication about safety. Deleting items 13, 68, and 76 improve the fit substantially ( $X^2_{77} = 190.75$ ,  $p < .001$ ; RMSEA = .06), leaving only one residual over .10. This occurs between item 6 (“My airline only keeps track of major safety problems and overlooks routine ones”) and item 84 (“As long as there is no accident, management doesn't care how the flight operations are performed”). It is not immediately clear that these items constitute a doublet factor, though both might be construed as reflecting a safety culture that responds only to significant problems. As the residual is relatively small (.12), both items are presently retained.

*Reporting system scale.* The original reporting system scale contains thirteen items. As with the other scales, a single-factor model does not fit the correlation matrix well ( $X^2_{65} = 390.25$ ,  $p < .001$ ; RMSEA = .10), with 8 of 91 residuals greater than .10, 4 of which are greater than .15. Examination of the residuals suggests that items 2 (“I am familiar with the system for formally reporting safety issues with my airline”) and 25 (“This airline's safety program includes mechanisms for me to report safety deficiencies”) might constitute a doublet factor, since both essentially address the existence of an accessible reporting system. As it seems more useful for diagnostic purposes to know whether pilots are familiar with the system than whether it exists, item 25 was deleted. The bulk of the remaining residuals involve items 9, 34, 44, and 67. It seems possible that these items reflect a second factor: pilots' willingness to report safety information about themselves and their peers, as compared to the rest of the items that deal with the organization's response to safety reports. However, dividing these items into a second factor does not result in good fit ( $X^2_{53} = 245.69$ ,  $p < .001$ ; RMSEA = .08), with 12 of 78 residuals greater than .10. Comments indicate that some of these items may be perceived as offensive by many respondents who are proud of their professionalism as pilots and believe that all pilots take safety very seriously as a matter of course. However, these items were originally included because a safety system to which pilots are unwilling to file reports serves little use. Including one of these items permits us to capture this important aspect of safety culture while eliminating the problem of the shared “extra” component of the items. Item 9 (“Pilots are willing to report information regarding safety violations, marginal aviator performance, and other unsafe behavior”) was

judged the least offensive of these four items, therefore items 34, 44, and 67 were deleted. The resulting nine-item model fits much better than the others ( $X^2_{27} = 79.99, p < .001$ ; RMSEA = .06), with one large residual of .12 remaining between items 9 and 17. No logical relationship between these items can be perceived (item 17 reads “Safety issues raised by pilots are communicated regularly to all pilots in the airline”), so both items are retained.

*Pilot empowerment scale.* The single-factor model yielded a very poor fit to the fourteen items of the pilot empowerment scale ( $X^2_{77} = 522.28, p < .001$ ; RMSEA = .11), with 28 of 105 residuals greater than .10. Examination of the residuals suggests a possible grouping into four subfactors: items 4, 8, and 32 cluster around a theme of pilot input into safety issues, items 16, 47, 62, 70, and 77 reflect peer influence on safety, items 24, 43, and 53 refer to pilots’ responsibility for safety, and items 36, 41, and 63 refer to pilots’ commitment to safety. However, the fit for this four-factor model ( $X^2_{71} = 174.92, p < .001$ ; RMSEA = .06), though an improvement over the single model, is still far from satisfactory, with 8 residuals over .10. In many cases, deleting individual items with large residuals results in two-item factors with no doublet items immediately apparent.

To gain insight into the structure of the data, we conducted an exploratory factor analysis on the correlation matrix using COFA. As the previous analysis suggests four possible subfactors, four factors were requested in the COFA analysis. The resulting four factors are in many ways similar to the factors suggested by the residual matrix, as shown in Table 3. We tested this model using a confirmatory factor analysis in Mx. The resulting model fit ( $X^2_{71} = 187.38, p < .001$ ; RMSEA = .06) compares to that of the four-factor model tested above. The fourth factor has only two items, which may contribute to misfit, so the model was tested again removing those items. The resulting fit is somewhat better ( $X^2_{71} = 143.48, p < .001$ ; RMSEA = .06), though still unsatisfactory with 5 residuals over .10 remaining. Logical relationships among the items with large residuals are not clear, though most seem to be related to item 16 (“The best pilots in the group expect other pilots to behave safely”). Deletion of this item does not result in substantially improved fit, ( $X^2_{41} = 103.20, p < .001$ ; RMSEA = .06), and three large residuals remain. It appears that items in this scale should be revised or possibly new items added in future versions of the survey.

**Table 3. Exploratory Factor Analysis for Pilot Empowerment Items**

Factors suggested by residual matrix	Factors suggested by COFA
1. 4, 8, 32	1. 4, 8, 32
2. 16, 47, 62, 70, 77	2. 16, 41, 47, 62, 70, 77
3. 24, 43, 53	3. 24, 36, 63
4. 36, 41, 63	4. 43, 53

*Organizational commitment scale.* As with the previous scales, a single-factor model showed a poor fit to the correlation matrix of the thirty organizational commitment items ( $X^2_{405} = 1268.21, p < .001$ ; RMSEA = .07). Forty-one of 465 residuals were greater than .10, with 5

greater than .20. This suggests that including other factors is necessary to account for the structure of the data. Attempts to group items logically or by large shared residuals were unsuccessful: separating out factors related to training ( $X^2_{404} = 1045.38, p < .001$ ; RMSEA = .06), and paperwork (with training factor in model:  $X^2_{402} = 901.94, p < .001$ ; RMSEA = .05) fit better than the single-factor model, but can hardly be said to fit well.

As a result, an exploratory factor analysis of the correlation matrix was conducted using COFA. As at least three possible factors had been identified in the previous analysis, a four factor solution was requested for the exploratory analysis. However, the promax rotated factor pattern matrix indicated that no item had its largest loading on the fourth factor, so a second exploratory analysis was conducted requesting only three factors. The resulting factors, based on the promax rotated factor pattern matrix, are interpretable, though they do not reflect different areas of safety within the airline (e.g., training, procedures, equipment, etc.) as was originally supposed but rather different elements of the organization's commitment to safety. The first factor contains items that primarily describe pilots' perceptions of management's attitude about safety – is safety identified as a core value, does the airline truly care about safety or merely pay lip service to the concept, etc. This factor is temporarily labeled “Organizational Attitude” in Table 4. The second factor consists of preventive approaches to safety, such as inclusion of safety in training, clear checklists, and regular maintenance. This factor is temporarily labeled “Preventive Safety.” The third factor includes items reflecting the organization's commitment to safety even when costly, such as maintaining suitable sleep schedules (which require more personnel) and keeping equipment up-to-date. The primary difference between factors two and three appears to be cost – items in factor two can be improved at little cost to the airline, while the items in factor three appear to require greater resources. Factor three is therefore temporarily labeled “Resource Commitment to Safety.” As with the pilot empowerment items, a confirmatory factor analysis was fit to the correlation matrix using Mx to test the three-factor model. The fit of this model was better than for any of the models tested before the exploratory analysis ( $X^2_{402} = 857.12, p < .001$ ; RMSEA = .05), but 57 of the 465 residuals had absolute values of .10 or greater. Many of these residuals appeared to be due to items 3, 19, 26, and 35, each of which was associated with at least five large residuals. Inspection of the factor pattern matrix showed that all four of these items had sizeable loadings on factors other than the factor to which they were assigned. Deletion of these four items resulted in better fit ( $X^2_{296} = 509.67, p < .001$ ; RMSEA = .04) and only 6 of 351 residuals were larger than .10. Of these, only one was larger than .14. It occurred between item 45 and item 79, which are the only two items to use the phrase “personnel responsible for safety.” It seems logical to conclude that these two items form a doublet factor. Item 79 (“Personnel responsible safety have authority to implement changes”) seems somewhat more critical than item 45 (“Personnel responsible for safety hold a high status in my airline”), so item 45 was deleted, resulting in a slightly better fit ( $X^2_{272} = 452.29, p < .001$ ; RMSEA = .04). Six large residuals (absolute value < .10) still remained, but the largest of these was .13 and no clear relationships among items were apparent.

**Table 4. Exploratory Factor Analysis for Organizational Commitment Items**

Tentative factor name	Items
Organizational Attitude	3, 10, 11, 18, 26, 27, 33, 46, 56, 57, 69, 75, 78, 82, 83
Preventive Safety	5, 12, 19, 20, 35, 38, 45, 50, 58
Resource Commitment to Safety	28, 65, 66, 72, 73, 79

*Revised model overall fit.* The revised arrangement of items, based on the above information, appears in Table 5. This model expands the original five factors into nine by dividing the organizational commitment and pilot empowerment scales into three factors each. The original model contained 83 items, but eighteen items were deleted in the revision process to leave a total of 65 items in the revised model. The fit of the revised model was better than that of the original model ( $\chi^2_{1980} = 3757.77, p < .001$ ; RMSEA = .05), though comparison to a null model ( $\chi^2_{2080} = 13835.498$ ) indicated that the fit was still not as good as might be desired. The value of the normed fit index was .73, the Tucker-Lewis index .84, and the relative non-centrality index .85 (see Table 2 for comparison to the original model). Some large residuals did persist in the revised model; 176 of the 2145 absolute residual correlations (8%) were greater than .10 and 47 of those (2%) were greater than .15. The correlation matrix and matrix of discrepancies can be found in Appendix 2.

**Table 5. Items in Edited Subscales****Accountability System**

- 15. Airline management shows favoritism to certain pilots (R)
- 29. Standards of accountability are consistently applied to all pilots in this airline
- 31. Pilots are consistently held accountable for acting unsafely, even if their actions saved time or money
- 49. Pilots get little recognition for new safety ideas (R)
- 61. Being involved in an accident or incident, even if it was not your fault, has an adverse effect on your reputation with fellow pilots (R)
- 80. When pilots make a mistake or do something wrong, they are dealt with fairly by the airline

**6 items**                       **$\alpha = .65$**                        **$\omega = .66$**   
 **$\chi^2_9 = 27.11$**                        **$p = .001$**                       **RMSEA = .06**                      **Absolute residuals > .10 = 0**

**Management Involvement**

- 1. Management involvement in safety issues has a high priority at my airline
- 6. My airline only keeps track of major safety problems and overlooks routine ones (R)
- 14. My airline's safety department is doing a good job
- 21. Upper level management gets personally involved in safety activities
- 22. Safety standards are seldom discussed openly (R)
- 30. Management is receptive to learning about safety concerns
- 39. Management has a clear understanding of risks associated with flight operations
- 42. Management often fails to recognize when pilots are flying unsafely (R)
- 51. Results of FAA safety inspections are made available to pilots for review and information
- 54. Safety issues are assigned high priority in meetings at this airline



- 59. Management stops unsafe operations or activities
- 60. Chief pilots do not hesitate to contact pilots to discuss safety issues
- 81. There are good communications here about safety
- 84. As long as there is no accident, management doesn't care how the flight operations are performed (R)

**14 items**                       $\alpha = .91$                        $\omega = .91$   
 $X^2_{77} = 190.75$                        $p < .001$                       **RMSEA = .06**                      **Absolute residuals > .10 = 1**

### **Organizational Commitment**

#### **Factor 1 – Organizational Attitude**

- 10. Mgt doesn't show much concern for safety until there is an accident or incident (R)
- 11. Safety is identified as a core value in my airline
- 18. Management expects pilots to push the weather (R)
- 27. Management tries to get around safety requirements whenever they get a chance (R)
- 33. My airline is more concerned with making money than being safe (R)
- 46. My airline inappropriately uses the MEL (e.g. illegally, use when it would be better to fix aircraft) (R)
- 56. Management's view is that not all accidents are preventable (R)
- 57. Management views FARs as a hindrance (R)
- 69. When an accident occurs, management always blames the pilot (R)
- 75. Management expects pilots to push for on time performance, even if it means compromising safety (R)
- 78. When it comes down to it, people in this airline would rather take a chance with safety than cancel a flight (R)
- 82. Some safety procedures/rules are not really practical (R)
- 83. My airline does not cut corners where safety is concerned

**13 items**                       $\alpha = .92$                        $\omega = .92$

#### **Factor 2 – Preventive Safety**

- 5. Training focuses more on minimum requirements for a check ride than on safety (R)
- 12. Checklists and procedures are easy to understand
- 20. My airline's manuals are up to date
- 38. Management views regulation violations very seriously, even when they don't result in any serious damage
- 50. Safety is always discussed during training at my airline
- 58. Safety is emphasized by my airline during the interview and orientation process

**6 items**                       $\alpha = .65$                        $\omega = .67$

#### **Factor 3 – Resource Commitment to Safety**

- 28. Management is willing to invest money and effort to improve safety
- 65. It is hard for pilots here to maintain a consistent sleep schedule (R)
- 66. My airline does all it can to prevent accidents or incidents.
- 72. Management is committed to equipping aircraft with up-to-date technology
- 73. Pilots who are not feeling well or are tired are encouraged not to fly
- 79. Personnel responsible safety have authority to implement changes

**6 items**                       $\alpha = .76$                        $\omega = .77$   
**Overall  $X^2_{272} = 452.29$**                        $p < .001$                       **RMSEA = .04**                      **Absolute residuals > .10 = 6**

### **Pilot Empowerment**

#### **Factor 1 – Pilot Input**

- 4. Pilots are seldom asked for input when airline procedures are developed or changed (R)
- 8. Pilots are actively involved in identifying and resolving safety concerns
- 32. Pilots are given sufficient opportunities to make suggestions regarding safety issues

**3 items**                       $\alpha = .64$                        $\omega = .65$

#### **Factor 2 – Peer Influence**

- 41. Pilots look at the airline's safety record as their own and take pride in it
- 47. Pilots who violate safety regulations upset other pilots even when no harm has resulted
- 62. Peer influence is effective at discouraging violations of operating procedures and flying regulations
- 70. It is important to fly safely if I am to keep the respect of other pilots in my airline
- 77. Pilots often encourage one another to work safely

**5 items**                       $\alpha = .74$                        $\omega = .74$

#### **Factor 3 – Pilot Responsibility/Commitment**

- 24. Management ensures that all pilots are responsible and accountable for safe flight operations
- 36. Pilots do all they can to prevent accidents
- 63. Pilots try to get around safety requirements whenever they get a chance (R)

**3 items**                       $\alpha = .47$                        $\omega = .49$   
**Overall  $X^2_{41} = 103.20$   $p < .001$**                       **RMSEA = .06**                      **Absolute residuals  $> .10 = 3$**

#### **Reporting System**

- 2. I am familiar with the system for formally reporting safety issues with my airline
- 9. Pilots are willing to report information regarding safety violations, marginal aviator performance, and other unsafe behavior
- 17. Safety issues raised by pilots are communicated regularly to all pilots in the airline
- 48. It is best to remain anonymous when reporting an unsafe condition or incident (R)
- 52. When a pilot reports a safety problem, management acts quickly to correct safety issues
- 55. Pilots who raise safety concerns are seen as troublemakers (R)
- 64. Pilots can report safety discrepancies without the fear of negative repercussions
- 71. There is no point in reporting a near miss (R)
- 74. I am satisfied with the way this airline deals with safety reports

**9 items**                       $\alpha = .78$                        $\omega = .78$   
 **$X^2_{27} = 79.99$   $p < .001$**                       **RMSEA = .06**                      **Absolute residuals  $> .10 = 1$**

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(R) indicates that the item was reverse coded for analysis; that is, that it represents a negative safety culture.

While the revised model showed better fit than the original model, it still did not fit the data particularly well. Examination of the residual matrix suggested that the discrepancies were not evenly scattered. Items within some scales tended to correlate more highly than expected with items in other scales. This was borne out by the factor correlation matrix (Table 6), which showed very high correlations among several factors. It seems likely that conceptual overlap may have occurred among the original subscales that would not have been detected by the revision process used (i.e., examining one subscale at a time).

**Table 6. Factor Correlations for Nine-Factor Model.**

	1	2	3	4	5	6	7	8	9
1. Accountability System	1.00								
2. Management Involvement	0.92	1.00							
3. Organizational Attitude	0.94	0.94	1.00						
4. Preventive Safety	0.63	0.76	0.63	1.00					
5. Resource Commitment	0.88	0.93	0.90	0.63	1.00				
6. Pilot Input	0.90	0.92	0.83	0.76	0.84	1.00			
7. Peer Influence	0.01	0.19	0.04	0.54	0.07	0.19	1.00		
8. Pilot Responsibility	0.46	0.49	0.37	0.85	0.32	0.43	0.60	1.00	
9. Reporting System	0.99	1.00	0.91	0.73	0.91	0.95	0.16	0.45	1.00

### *Conceptual Revisions*

To explore possible areas of overlap, the authors reexamined the survey items from a conceptual standpoint, with the intention of combining logically similar items that may have originally been assigned to different scales. The discussion took both the results of the previous analyses and respondent comments into account. Items were regrouped, then examined for potential doublet or redundant items. Thirteen items were deleted, but three items that had been deleted in the earlier analysis were reinstated, resulting in a total of 55 items. Item 76, which had been deleted because it formed a doublet factor regarding chief pilots, was returned to the survey and placed in a new cluster referring specifically to chief pilots. Item 68 was likewise restored to the same factor, which now contained more items referring to communication between management (chief pilots) and pilots. Item 43 had been eliminated because it belonged to a two-item factor in the exploratory factor analysis of the pilot empowerment scale. It was placed into the new “authority/empowerment” scale because it appears to reflect the intended content of this scale well, though it was suggested that the item be rephrased to be more general (turning around due to weather is a fairly infrequent occurrence for pilots at major airlines).

The new grouping suggested four broad factors with two or three subfactors each. The regrouped items appear in Table 7, with reliability and fit statistics where available, and a schematic comparison of the original and revised models appears in Figure 1. The broad factors roughly correspond to the five dimensions originally identified by Wiegmann et al. (2004). The Formal Safety System group, which consists of a reporting system factor (are pilots aware of the reporting system?), a response and feedback factor (what becomes of reported safety

information?), and a safety personnel factor (do safety personnel receive respect and authority?), is analogous to the original general reporting system factor. The Informal Safety System group combines the original accountability and pilot empowerment factors. One of the three subfactors measures accountability, one measures pilot authority/empowerment, and one measures peer influence on safety. The Middle Management group is similar to the intent of the original management involvement scale, but specifies more precisely who is meant by “management.” Respondent comments indicated that many of the items regarding “management” could apply to chief pilots or dispatchers in addition to upper management and that responses would vary depending on which group was referred to. The original survey did not contain items targeted toward dispatchers specifically, but it was suggested that many of the items currently assigned to the chief pilot subfactor could be repeated for that group. Respondents also suggested that safety attitudes communicated by instructors or trainers were often different from those of supervisors. Finally, the Organizational Commitment factor is essentially the same as the original organizational commitment scale, as divided into three subfactors in the preceding analysis, but with some items moved to more appropriate factors.

**Table 7. Regrouped Items**

**General Cluster: Formal Safety Department/Program**

**Reporting System**

- 2. I am familiar with the system for formally reporting safety issues with my airline
- 9. Pilots are willing to report information regarding safety violations, marginal aviator performance, and other unsafe behavior
- 48. It is best to remain anonymous when reporting an unsafe condition or incident (R)
- 55. Pilots who raise safety concerns are seen as troublemakers (R)
- 64. Pilots can report safety discrepancies without the fear of negative repercussions
- 71. There is no point in reporting a near miss (R)

<b>6 items</b>	<b><math>\alpha = .64</math></b>	<b><math>\omega = .64</math></b>	
<b><math>X^2_9 = 14.77</math></b>	<b><math>p = .097</math></b>	<b>RMSEA = .04</b>	<b>Absolute residuals &gt; .10 = 0</b>

**Response and Feedback**

- 6. My airline only keeps track of major safety problems and overlooks routine ones (R)
- 14. My airline's safety department is doing a good job
- 17. Safety issues raised by pilots are communicated regularly to all pilots in the airline
- 30. Management is receptive to learning about safety concerns
- 51. Results of FAA safety inspections are made available to pilots for review and information
- 52. When a pilot reports a safety problem, management acts quickly to correct safety issues
- 74. I am satisfied with the way this airline deals with safety reports

<b>7 items</b>	<b><math>\alpha = .86</math></b>	<b><math>\omega = .86</math></b>	
<b><math>X^2_{14} = 49.39</math></b>	<b><math>p &lt; .001</math></b>	<b>RMSEA = .07</b>	<b>Absolute residuals &gt; .10 = 1</b>

**Safety Personnel**

- 45. Personnel responsible for safety hold a high status in the airline
- 79. Personnel responsible for safety have the power to make changes

Reliability and fit statistics could not be computed for only two items. Additional items will be needed for this scale.

### **General Cluster: Informal Safety System**

#### **Accountability**

- 15. Airline management shows favoritism to certain pilots (R)
- 31. Pilots are consistently held accountable for acting unsafely, even if their actions saved time or money.
- 69. Whenever an accident or incident happens, the airline always blames the pilot (R).
- 80. When pilots make a mistake or do something wrong, they are dealt with fairly by the airline.

**4 items**                       $\alpha = .61$                        $\omega = .64$   
 $X^2_2 = 11.90$                        $p = .003$                       **RMSEA = .10**                      **Absolute residuals > .10 = 1**

#### **Pilots' Authority**

- 4. Pilots are seldom asked for input when airline procedures are developed or changed (R).
- 8. Pilots are actively involved in identifying and resolving safety concerns.
- 32. Pilots are given sufficient opportunities to make suggestions regarding safety issues.
- 43. My airline rarely questions a pilot's decision to turn around due to weather.
- 73. Pilots who are not feeling well or are tired are encouraged not to fly.

**5 items**                       $\alpha = .65$                        $\omega = .67$   
 $X^2_5 = 8.55$                        $p = .128$                       **RMSEA = .04**                      **Absolute residuals > .10 = 0**

#### **Professionalism**

- 41. Pilots look at the airline's safety record as their own and take pride in it
- 47. Pilots who violate safety regulations upset other pilots even when no harm has resulted
- 62. Peer influence is effective at discouraging violations of operating procedures and flying regulations
- 70. It is important to fly safely if I am to keep the respect of other pilots in my airline

**4 items**                       $\alpha = .68$                        $\omega = .69$   
 $X^2_2 = 1.37$                        $p = .503$                       **RMSEA = .00**                      **Absolute residuals > .10 = 0**

### **General Cluster: Middle Management**

#### **Chief Pilots**

- 39. Management has a clear understanding of risks associated with flight operations
- 42. Management often fails to recognize when pilots are flying unsafely (R)
- 60. Chief pilots do not hesitate to contact pilots to discuss safety issues
- 68. Pilots are kept informed of any changes that affect safety
- 76. Chief pilots are unavailable when pilots need help (R)
- 81. There are good communications here about safety
- 84. As long as there is no accident, management doesn't care how the flight operations are performed (R)

**7 items**                       $\alpha = .79$                        $\omega = .79$   
 $X^2_{14} = 49.92$                        $p < .001$                       **RMSEA = .07**                      **Absolute residuals > .10 = 1**

## Dispatch

### Instructors/Trainers

#### General Cluster: Organizational Commitment

##### **Safety Values**

- 10. Mgt doesn't show much concern for safety until there is an accident or incident (R)
- 11. Safety is identified as a core value in my airline
- 18. Management expects pilots to push the weather (R)
- 27. Management tries to get around safety requirements whenever they get a chance (R)
- 33. My airline is more concerned with making money than being safe (R)
- 46. My airline inappropriately uses the MEL (e.g. illegally, use when it would be better to fix aircraft) (R)
- 56. Management's view is that not all accidents are preventable (R)
- 57. Management views FARs as a hindrance (R)
- 75. Management expects pilots to push for on time performance, even if it means compromising safety (R)
- 78. When it comes down to it, people in this airline would rather take a chance with safety than cancel a flight (R)
- 82. Some safety procedures/rules are not really practical (R)
- 83. My airline does not cut corners where safety is concerned

**12 items**                       **$\alpha = .91$**                        **$\omega = .91$**   
 **$X^2_{54} = 107.51$**                        **$p < .001$**                       **RMSEA = .05**                      **Absolute residuals > .10 = 1**

##### **Safety Fundamentals**

- 5. I am confident that maintenance on aircraft is adequately performed and that aircraft are safe to operate
- 12. Checklists and procedures are easy to understand
- 20. My airline's manuals are up to date
- 38. Management views regulation violations very seriously, even when they don't result in any serious damage
- 50. Safety is always discussed during training at my airline
- 58. Safety is emphasized by my airline during the interview and orientation process

**6 items**                       **$\alpha = .65$**                        **$\omega = .66$**   
 **$X^2_9 = 5.93$**                        **$p = .747$**                       **RMSEA = .00**                      **Absolute residuals > .10 = 0**

##### **Going Beyond Compliance**

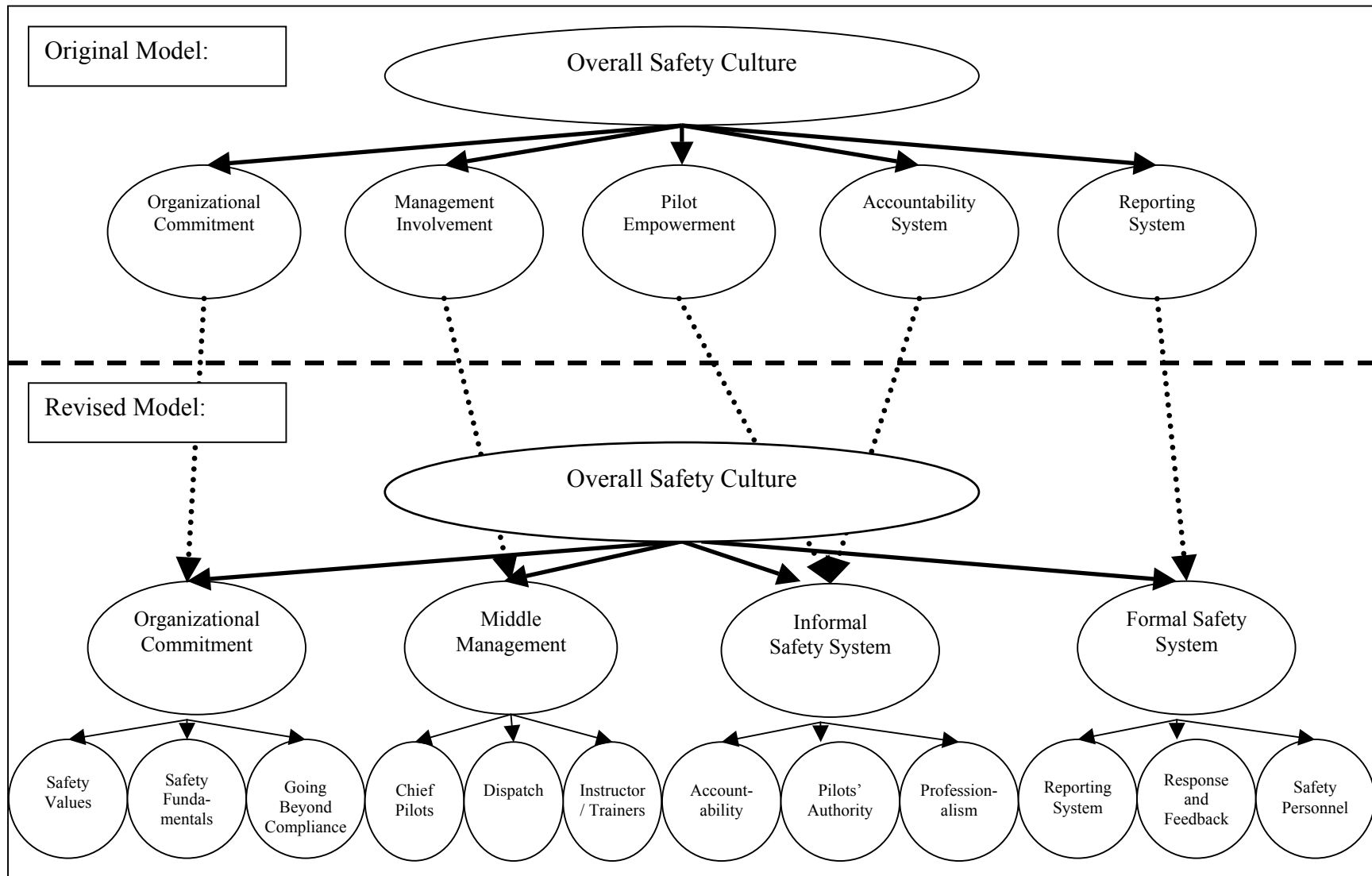
- 28. Management is willing to invest money and effort to improve safety
- 65. It is hard for pilots here to maintain a consistent sleep schedule (R)
- 66. My airline does all it can to prevent accidents or incidents.
- 72. Management is committed to equipping aircraft with up-to-date technology

**4 items**                       **$\alpha = .72$**                        **$\omega = .72$**   
 **$X^2_2 = 3.19$**                        **$p = .203$**                       **RMSEA = .04**                      **Absolute residuals > .10 = 0**

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(R) indicates that the item was reverse coded for analysis; that is, that it represents a negative safety culture.

Figure 1. Comparison of original and revised models of safety culture.



Individually, the new scales appear to fit reasonably well (Table 7; fit could not be tested for the safety personnel, dispatch, and instructor scales because they had too few items). Of the nine subscales tested, five had nonsignificant chi-square statistics, RMSEA values below .05, and no residuals greater than .10. Of the others, the largest RMSEA was .10, no scale had more than one large residual, and the largest of those was .15. Overall, the full model appears to fit reasonably well compared to the others tested (Table 8;  $\chi^2_{1394} = 2575.96$ ,  $p < .001$ ; RMSEA = .05). The normed fit index was .78, the Tucker-Lewis Index was .88, and the relative non-centrality index was .89. These values are close to the values typically accepted as indicative of good fit. This model also had fewer large discrepancies than the previous models, with 105 of 1540 (7%) absolute residual correlations greater than .10 and only 16 (1%) of those greater than .15. Examination of the residuals suggested that many of the largest discrepancies were related to items 9, 31, and 41. Deleting these items improved the fit slightly ( $\chi^2_{1238} = 2246.95$ ,  $p < .001$ ; RMSEA = .04; normed fit index = .80; Tucker-Lewis index = .89; relative non-centrality index = .90). The correlation matrix and residual matrix for this final model appear in Appendix 3.

**Table 8. Fit Indices for the Four-Cluster and Revised Four-Cluster (Final) Models**

Four-Cluster Model (9 testable factors)		Revised Four-Cluster Model	
$\chi^2$	2575.96	$\chi^2$	2246.95
df	1394	df	1238
RMSEA	.05	RMSEA	.04
Null Model $\chi^2$ (comparison)	11772.03	Null Model $\chi^2$ (comparison)	11295.34
Null Model df	1485	Null Model df	1326
Normed Fit Index	.78	Normed Fit Index	.80
Tucker-Lewis Index	.88	Tucker-Lewis Index	.89
Relative Non-Centrality Index	.89	Relative Non-Centrality Index	.90

Though the revised model appeared to be a substantial improvement over the original model, the revised survey was not complete. Several new items were written to create the dispatch scale and to cover important aspects of other scales. Some items were also removed due to the possibility of redundancy with other items in the same scale; we sought to minimize the potential for doublet factors in future analyses. This process was undertaken with the goal of retaining four or five items in each of the eleven subscales – enough to provide factor stability without making the survey overly long and cumbersome for respondents. Items were also edited a final time to clarify potentially ambiguous wording. The fully revised survey appears in Appendix 1.

An additional change in the revised survey is a different approach to the measurement of risk. The original survey asked pilots to report their perceptions of the likelihood of an accident or incident occurring in the next twelve months, either to the airline in general or to themselves



personally. Responses to these items were consistently low, but respondent comments suggested that responses may have been driven by pilots' lay theories of accident predictability or preventability in general rather than by their beliefs about safety at their airline. Several respondents indicated that they felt such an event was beyond their ability to predict. Some argued that every airline has a statistical likelihood of experiencing an accident, while others felt that pilots' personal commitment to safety would keep flights safe regardless of management practices. Consequently, it is difficult to argue that these items represent pilots' perceptions of overall safety at their airline. A better measure may be pilots' self-reports of safety-related behavior, such as calling in sick when fatigued or reporting safety information. As these behaviors do not always lead to accidents or incidents (though they do increase the probability of accidents), they are likely to be more common occurrences than actual accidents. The revised risk behavior measure (see Appendix 1 asks pilots to report past behavior, not to predict uncertain future events. While it seems likely that respondents will underreport these behaviors, we expect that the aggregate level of reported behavior will be proportional to the actual level, allowing comparisons between airlines.

## CONCLUSIONS

While the initial version of the survey was far from perfect in psychometric terms, the present analysis provides insight into the nature of safety culture in airlines and suggests several useful modifications. Many of the problems were due to errors in item writing, such as ambiguous items or items that did not apply well to the target respondents. The "synthesis" approach of combining items from existing surveys is likely the cause of this problem. Many of the original items were adapted from instruments used in manufacturing, nuclear power, or other contexts in which both jobs and organizations are structured very differently from the aviation industry. While it may seem desirable to create one general measure of safety culture that would apply across organizations, industries, and nations, this may be neither possible nor desirable in practice. Safety culture is closely tied to the structure of the organization (e.g., management involvement depends greatly on who is meant by "management") and the work itself (e.g., an accident involving an airline pilot is likely to be very different from an accident involving a factory worker). In particular, responses and respondent comments to the survey suggested that pilots distinguish between several different groups under the general heading "management" – chief pilots, dispatch, trainers/instructors, safety personnel, and upper-level management. Pilots have different relationships with each of these groups, and each group can affect safety culture in different ways. Respondents' comments suggested that, at least in this airline, different management groups may have widely divergent attitudes and practices regarding safety. Future research needs to consider the impact of each group on pilots' safety behavior.

Other problems were due to doublet factors, or pairs of closely related items. The restructured version of the scale addresses this issue either by removing items or adding additional ones to fill out essential elements of safety culture (e.g., safety personnel). The data and comments also suggest that modifying the structure of the survey may be advisable. Items in the original survey were presented in random order, to serve as a conservative test of reliability. However, this appears to have created ambiguity regarding many items, particularly those related to management or communication. Clustering the items by scale should make it easier for respondents to distinguish precisely what is intended, as should repeating certain items that may be applicable to multiple groups (e.g., "Chief pilots have a clear understanding of the risks

associated with flight operations,” “Instructors have a clear understanding of the risks associated with flight operations,” etc.).

The analyses presented here suggested a number of modifications to the original survey. The revised survey is substantially different from the original; new data is required to test the appropriateness of the new model. Surveying multiple organizations with the same instrument is desirable to ensure chance characteristics of the organization surveyed do not exert undue influence on the structure of the measure. Multi-organizational data would also potentially allow for tests of criterion-related validity, that is, whether safety culture predicts actual safety (though airline accidents are, thankfully, infrequent, making this a low-base-rate measure) or perceived safety. This is critical for determining the value of the proposed measure in actually assessing an outcome of importance to airlines.

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**Appendix 1.**  
**Correlations and Discrepancies for Revised Model.**

**Formal Safety Program**

<b><i>Reporting System</i></b> <i>Please rate your airline's <b>official</b> system for reporting safety issues and concerns.</i>	<b><u>Item Status</u></b>
The safety reporting system is convenient and easy to use.	New
Pilots can report safety discrepancies without fear of negative repercussions.	Original
Pilots are willing to report information regarding marginal performance or unsafe actions of other pilots.	Revised
Pilots don't bother reporting near misses or close calls since these events don't cause any real damage.	Revised
Pilots are willing to file reports about unsafe situations, even if the situation was caused by their own actions.	Revised
<b><i>Response and Feedback</i></b> <i>These items refer to the response pilots receive from your airline's <b>official</b> safety system.</i>	
Safety issues raised by pilots are communicated regularly to all other pilots in this airline.	Original
When a pilot reports a safety problem, it is corrected in a timely manner.	Revised
Pilots are satisfied with the way this airline deals with safety reports.	Original
My airline only keeps track of major safety problems and overlooks routine ones.	Original
<b><i>Safety Personnel (e.g., Director of Flight Safety)</i></b> <i>These items refer to the person or people in your airline who are formally designated as responsible for safety. (This does not include union representatives.)</i>	
Personnel responsible for safety hold a high status in the airline.	Original
Personnel responsible for safety have the power to make changes.	Original
Personnel responsible for safety have a clear understanding of the risks involved in flying the line.	Revised
Safety personnel have little or no authority compared to operations personnel.	New
Safety personnel demonstrate a consistent commitment to safety.	New

### **Informal Aspects of Safety**

<b><i>Accountability</i></b> <i>These items refer to the ways in which pilots are treated based on their safe or unsafe behavior at your airline.</i>	<b><u>Item Status</u></b>
Airline management shows favoritism to certain pilots.	Original
Standards of accountability are consistently applied to all pilots in this organization.	Original
When pilots make a mistake or do something wrong, they are dealt with fairly by the airline.	Original
When an accident or incident happens, management always blames the pilot.	Original
<b><i>Pilots' Authority</i></b> <i>These items refer to the extent to which pilots have the authority to provide input and make decisions regarding safety.</i>	
Pilots are seldom asked for input when airline procedures are developed or changed.	Original
Pilots are actively involved in identifying and resolving safety concerns.	Original
Pilots who call in sick or fatigued are scrutinized by the chief pilot or other management personnel.	Revised
Pilots have little real authority to make decisions that affect the safety of normal flight operations.	Revised
Management rarely questions a pilot's decision to delay a flight for a safety issue.	Revised
<b><i>Professionalism</i></b> <i>These items refer to the attitudes you perceive among your fellow pilots in regard to safety.</i>	
Pilots view the airline's safety record as their own and take pride in it.	Original
Pilots who don't fly safely quickly develop a negative reputation among other pilots.	Revised
Pilots with less seniority are willing to speak up regarding flight safety issues.	New
Decisions made by senior pilots are difficult to challenge.	New
Pilots never cut corners or compromise safety regardless of the operational pressures to do so.	Revised

## Ops Personnel

<b><i>Chief Pilots</i></b> <i>These items refer to the chief pilots with whom you interact regularly.</i>	<b><u>Item Status</u></b>
Chief pilots do not hesitate to contact line pilots to proactively discuss safety issues.	Revised
Chief pilots are unavailable when line pilots need help.	Original
As long as there is no accident or incident, chief pilots don't care how flight operations are performed.	Revised
Chief pilots have a clear understanding of risks associated with flight operations.	Revised
Pilots often report safety concerns to their chief pilot rather than the safety department.	New
<b><i>Dispatch</i></b> <i>These items refer to your airline's dispatch procedures.</i>	
Dispatch consistently emphasizes information or details (e.g., weather requirements, NOTAMs) that affect flight safety.	Revised
Dispatch inappropriately uses the MEL (e.g., use when it would be better to fix equipment).	Revised
Dispatch is responsive to pilots' concerns about safety.	Revised
Dispatch would rather take a chance with safety than cancel a flight.	Revised
<b><i>Instructors/Trainers</i></b> <i>These items refer to your airline's flight instructors or trainers.</i>	
Instructors/trainers have a clear understanding of risks associated with flight operations.	Revised
Safety is consistently emphasized during training at my airline.	Original
Instructors/trainers teach shortcuts and ways to get around safety requirements.	New
Instructors/trainers prepare pilots for various safety situations, even uncommon or unlikely ones.	Revised

## **Organizational Commitment**

<b><i>Safety Values</i></b> <i>These items refer to the value that your airline's upper level management places on safety.</i>	<b><u>Item Status</u></b>
Safety is a core value in my airline.	Original
Management is more concerned with making money than being safe.	Original
Management expects pilots to push for on time performance, even if it means compromising safety.	Revised
Management doesn't show much concern for safety until there is an accident or incident.	Original
Management does not cut corners where safety is concerned.	Original
<b><i>Safety Fundamentals</i></b> <i>These items refer to your airline's typical practices related to safety in various areas.</i>	
Checklists and procedures are easy to understand.	Original
My airline's manuals are carefully kept up to date.	Original
My airline is willing to invest money and effort to improve safety.	Original
My airline is committed to equipping aircraft with up-to-date technology.	Original
My airline ensures that maintenance on aircraft is adequately performed and that aircraft are safe to operate.	Revised
<b><i>Going Beyond Compliance</i></b> <i>These items refer to upper level management's commitment to meeting or exceeding safety requirements.</i>	
Management goes above and beyond regulatory minimums when it comes to issues of flight safety.	Revised
Management schedules pilots as much as legally possible, with little concern for pilots' sleep schedule or fatigue.	Revised
Management tries to get around safety requirements whenever they get a chance.	Revised
Management views regulation violations very seriously, even when they don't result in any serious damage.	Original

### **Risk Items**

Instructions to pilots: *The following section describes behaviors that aviation professionals sometimes engage in or feel pressured to engage in. Please answer each item **twice** – once referring to your own behavior and once referring to the behavior of other pilots you know. Remember that your answers to this questionnaire are **completely** anonymous and no attempt will be made to identify you personally. Your honest answers will help us to make effective recommendations regarding safety at your airline.*

Reported for duty when fatigued, ill, or under unusual stress because you had no other choice.	New
Been pressured to takeoff or land in bad weather with minimal briefing, to maintain schedule.	New
Allowed a senior pilot's errors to go unchallenged.	New
Been pressured to fly a company aircraft you did not believe was in safe condition.	New
Failed to challenge a superior on a safety issue for fear of losing your job.	New
Made a hard landing that you didn't report.	New
Been aware that another pilot was not flying safely but said nothing.	New

### **Airline Safety Record Items**

My airline line is likely to be involved in an accident over the next twelve months.	Revised
My airline is likely to be involved in an incident over the next twelve months.	Revised
My airline is likely to be cited by the FAA for a major safety violation over the next twelve months.	New



### **Discarded Items**

Following safety procedures is consistently expected.
Management expects pilots to push the weather.
Management's view is that not all accidents are preventable.
Management views FARs as a hindrance.
Safety is emphasized in interview & orientation process.
Some safety procedures are not really practical.
Safety works until we are busy.
Flight Management closely monitors proficiency and currency standards to ensure pilots are qualified to fly their assigned flights.
Pilots are kept informed of changes that affect safety.
Management involvement in safety issues has a high priority at my airline.
Safety standards are seldom discussed openly.
Management stops unsafe operations or activities.
Safety issues are assigned high priority in meetings at this airline.
There are good communications about safety.
Safety department is doing a good job.
Management often fails to recognize when pilots are flying unsafely.
Upper level management gets personally involved in safety activities.
Results of FAA safety inspections are made available to pilots.
Being involved in an accident or incident, even if it was not your fault, would have an adverse effect on your career with this airline.
Pilots get little recognition for new safety ideas.
Pilots do all they can to prevent accidents.

The best pilots in the group expect other pilots to behave safely.
Pilots often encourage one another to work safely.
Management ensures that all pilots are responsible and accountable for safe flight operations.
Peer influence is effective at discouraging violations.
I am encouraged to stop flight related activities that are unsafe.
Airline rarely questions pilot's decision to turn around.
Pilots given sufficient opportunities to make suggestions.
Pilots who raise safety concerns are seen as troublemakers.
It is best to remain anonymous when reporting an unsafe condition.
I am likely to be involved in an incident in next 12 months.
I am likely to be involved in an accident in next 12 months.
Other employees agree on the likelihood of an accident.

## Appendix 2. Correlations and Discrepancies for Revised Model.

Note: Correlations appear on and below the diagonal. Discrepancies between the actual correlation and that predicted by the revised model appear above the diagonal.

### Section 1. Correlations between Accountability System Items and Other Items

	Q15_AS_R	Q29_AS	Q31_AS	Q49_AS_R	Q61_AS_R	Q80_AS
Q15_AS_R	<b>1.00</b>	<b>0.26</b>	0.06	0.05	0.05	0.09
Q29_AS	0.46	<b>1.00</b>	<b>0.17</b>	-0.04	-0.02	0.07
Q31_AS	0.19	0.32	<b>1.00</b>	-0.05	-0.08	-0.08
Q49_AS_R	0.30	0.25	0.13	<b>1.00</b>	0.03	-0.10
Q61_AS_R	0.19	0.14	0.03	0.23	<b>1.00</b>	-0.01
Q80_AS	0.35	0.38	0.11	0.29	0.20	<b>1.00</b>
Q1_MI	0.31	0.24	0.19	0.35	0.17	0.44
Q6_MI_R	0.32	0.31	0.17	0.39	0.16	0.42
Q14_MI	0.31	0.28	0.18	0.38	0.16	0.39
Q21_MI	0.31	0.24	0.17	0.41	0.15	0.40
Q22_MI_R	0.23	0.37	0.16	0.33	0.15	0.33
Q30_MI	0.37	0.34	0.27	0.51	0.19	0.51
Q39_MI	0.23	0.24	0.23	0.35	0.14	0.43
Q42_MI_R	0.22	0.21	0.07	0.26	0.11	0.22
Q51_MI	0.17	0.20	0.10	0.27	0.06	0.27
Q54_MI	0.26	0.28	0.25	0.44	0.13	0.33
Q59_MI	0.28	0.30	0.25	0.37	0.11	0.44
Q60_MI	0.26	0.29	0.20	0.19	0.02	0.33
Q81_MI	0.35	0.36	0.21	0.39	0.16	0.56
Q84_MI_R	0.28	0.30	0.22	0.44	0.24	0.49
Q10_OC_R	0.37	0.27	0.19	0.47	0.28	0.49
Q11_OC	0.32	0.32	0.19	0.38	0.19	0.39
Q18_OC_R	0.33	0.37	0.24	0.33	0.25	0.41
Q27_OC_R	0.34	0.35	0.24	0.40	0.18	0.47
Q33_OC_R	0.34	0.33	0.27	0.47	0.31	0.46
Q46_OC_R	0.40	0.34	0.26	0.36	0.25	0.37
Q56_OC_R	0.23	0.28	0.19	0.34	0.20	0.40
Q57_OC_R	0.32	0.30	0.30	0.39	0.16	0.44
Q69_OC_R	0.29	0.28	0.16	0.41	0.30	0.58
Q75_OC_R	0.33	0.34	0.22	0.44	0.21	0.49
Q78_OC_R	0.26	0.37	0.18	0.39	0.21	0.44
Q82_OC_R	0.12	0.21	0.14	0.16	0.14	0.13
Q83_OC	0.32	0.27	0.20	0.44	0.23	0.54
Q5_OC_R	0.19	0.21	0.15	0.17	0.08	0.24
Q12_OC	0.13	0.30	0.17	0.09	0.00	0.24
Q20_OC	0.13	0.19	0.13	0.11	-0.07	0.16
Q38_OC	0.24	0.27	0.33	0.16	-0.04	0.23
Q50_OC	0.21	0.26	0.22	0.18	-0.01	0.20
Q58_OC	0.19	0.27	0.20	0.16	0.00	0.25
Q28_OC	0.32	0.30	0.19	0.41	0.18	0.47
Q65_OC_R	0.11	0.05	0.04	0.24	0.10	0.14
Q66_OC	0.29	0.29	0.21	0.42	0.23	0.41

Q72_OC	0.26	0.21	0.23	0.38	0.10	0.37
Q73_OC	0.19	0.23	0.12	0.31	0.15	0.33
Q79_OC	0.25	0.23	0.14	0.37	0.09	0.32
Q4_EE_R	0.24	0.22	0.13	0.37	0.17	0.28
Q8_EE	0.28	0.34	0.15	0.33	0.09	0.31
Q32_EE	0.29	0.34	0.21	0.43	0.19	0.39
Q41_EE	0.06	0.16	0.19	0.00	-0.04	0.08
Q47_EE	-0.06	0.10	0.11	-0.09	-0.15	-0.01
Q62_EE	0.05	0.08	0.11	-0.08	-0.23	0.05
Q70_EE	0.00	-0.01	0.16	-0.12	-0.25	-0.06
Q77_EE	0.01	0.16	0.18	-0.01	-0.03	0.03
Q24_EE	0.12	0.34	0.36	0.15	0.05	0.17
Q36_EE	0.04	0.15	0.22	0.02	-0.02	0.04
Q63_EE_R	0.04	0.19	0.14	-0.01	0.04	0.08
Q2_RP	0.07	0.07	0.06	0.07	0.04	0.17
Q9_RP	0.15	0.28	0.16	0.15	0.03	0.15
Q17_RP	0.30	0.27	0.14	0.37	0.11	0.30
Q48_RP_R	0.10	0.13	0.02	0.33	0.30	0.25
Q52_RP	0.30	0.30	0.24	0.51	0.22	0.43
Q55_RP_R	0.32	0.31	0.18	0.49	0.25	0.50
Q64_RP	0.31	0.37	0.20	0.35	0.23	0.49
Q71_RP_R	0.07	0.18	0.17	0.06	0.01	0.16
Q74_RP	0.31	0.37	0.26	0.47	0.21	0.50

## Section 2. Correlations between Management Involvement Items and Other Items

	Q1_MI	Q6_MI_R	Q14_MI	Q21_MI	Q22_MI_R	Q30_MI	Q39_MI	Q42_MI_R	Q51_MI	Q54_MI	Q59_MI	Q60_MI	Q81_MI	Q84_MI_R
Q15_AS_R	0.03	0.07	0.05	0.06	0.00	0.07	-0.02	0.07	0.00	0.00	0.01	0.09	0.06	0.02
Q29_AS	-0.09	0.03	-0.02	-0.05	<b>0.11</b>	-0.01	-0.05	0.04	0.00	-0.03	0.00	0.09	0.02	0.00
Q31_AS	-0.02	-0.01	-0.01	-0.01	-0.01	0.04	0.05	-0.04	-0.03	0.05	0.05	0.08	-0.01	0.03
Q49_AS_R	-0.06	0.03	0.00	0.05	-0.01	0.06	-0.02	0.04	0.02	0.05	-0.02	-0.06	-0.04	0.07
Q61_AS_R	-0.05	-0.04	-0.05	-0.05	-0.03	-0.05	-0.06	-0.01	-0.08	-0.08	<b>-0.10</b>	<b>-0.11</b>	-0.08	0.04
Q80_AS	0.01	0.04	-0.01	0.02	-0.01	0.05	0.05	-0.01	0.01	-0.07	0.04	0.07	<b>0.11</b>	0.10
Q1_MI	<b>1.00</b>	0.01	0.08	0.07	-0.03	0.03	0.03	0.00	-0.03	0.05	0.03	0.00	-0.01	0.00
Q6_MI_R	0.49	<b>1.00</b>	0.01	-0.01	0.06	-0.04	0.00	0.07	0.04	-0.08	-0.03	0.02	-0.03	<b>0.10</b>
Q14_MI	0.59	0.46	<b>1.00</b>	-0.06	-0.01	0.01	-0.07	0.00	0.00	-0.02	0.01	-0.06	0.08	-0.04
Q21_MI	0.55	0.41	0.38	<b>1.00</b>	-0.01	0.04	0.09	0.02	-0.02	0.06	0.01	-0.02	-0.03	-0.01
Q22_MI_R	0.41	0.45	0.40	0.38	<b>1.00</b>	0.00	0.00	-0.01	0.09	0.02	-0.03	0.07	0.03	0.01
Q30_MI	0.62	0.48	0.55	0.55	0.48	<b>1.00</b>	0.05	-0.05	0.03	0.07	0.00	0.00	-0.01	-0.01
Q39_MI	0.52	0.43	0.38	0.51	0.39	0.58	<b>1.00</b>	0.02	-0.07	0.04	0.04	-0.01	-0.02	0.04
Q42_MI_R	0.29	0.32	0.27	0.27	0.23	0.27	0.28	<b>1.00</b>	0.01	-0.04	0.04	0.00	-0.02	0.00
Q51_MI	0.31	0.34	0.31	0.27	0.37	0.39	0.23	0.19	<b>1.00</b>	0.02	0.04	0.06	0.01	-0.07
Q54_MI	0.57	0.38	0.46	0.51	0.44	0.63	0.50	0.23	0.34	<b>1.00</b>	0.09	0.03	-0.01	-0.09
Q59_MI	0.54	0.43	0.49	0.46	0.39	0.55	0.50	0.31	0.36	0.58	<b>1.00</b>	0.03	-0.01	0.00
Q60_MI	0.33	0.31	0.25	0.26	0.33	0.35	0.28	0.18	0.26	0.34	0.34	<b>1.00</b>	0.05	-0.01
Q81_MI	0.57	0.48	0.60	0.47	0.49	0.60	0.49	0.28	0.36	0.53	0.53	0.40	<b>1.00</b>	-0.02
Q84_MI_R	0.50	0.54	0.42	0.42	0.42	0.53	0.48	0.26	0.24	0.39	0.47	0.29	0.50	<b>1.00</b>
Q10_OC_R	0.69	0.60	0.54	0.57	0.45	0.65	0.53	0.31	0.31	0.50	0.52	0.24	0.57	0.62
Q11_OC	0.59	0.44	0.52	0.41	0.42	0.52	0.43	0.26	0.24	0.49	0.48	0.33	0.57	0.48
Q18_OC_R	0.45	0.42	0.42	0.38	0.41	0.46	0.35	0.25	0.24	0.45	0.45	0.25	0.45	0.50
Q27_OC_R	0.61	0.52	0.50	0.47	0.42	0.57	0.43	0.31	0.26	0.47	0.51	0.25	0.49	0.58
Q33_OC_R	0.58	0.50	0.51	0.52	0.42	0.60	0.47	0.28	0.26	0.46	0.49	0.22	0.52	0.56
Q46_OC_R	0.49	0.47	0.47	0.38	0.38	0.48	0.40	0.27	0.26	0.42	0.44	0.26	0.48	0.48
Q56_OC_R	0.37	0.37	0.32	0.33	0.40	0.42	0.34	0.21	0.23	0.39	0.39	0.25	0.47	0.46
Q57_OC_R	0.53	0.50	0.49	0.47	0.40	0.53	0.50	0.31	0.26	0.43	0.47	0.22	0.51	0.55
Q69_OC_R	0.46	0.40	0.40	0.44	0.31	0.48	0.45	0.24	0.27	0.39	0.43	0.25	0.48	0.56
Q75_OC_R	0.45	0.43	0.42	0.40	0.38	0.48	0.45	0.28	0.26	0.38	0.46	0.22	0.49	0.56
Q78_OC_R	0.44	0.46	0.46	0.36	0.46	0.51	0.43	0.33	0.30	0.47	0.49	0.27	0.52	0.52
Q82_OC_R	0.12	0.15	0.12	0.18	0.10	0.18	0.19	0.22	0.10	0.20	0.23	0.04	0.18	0.21
Q83_OC	0.59	0.53	0.53	0.52	0.43	0.61	0.54	0.27	0.33	0.51	0.57	0.22	0.59	0.56

Q5_OC_R	0.25	0.34	0.39	0.18	0.28	0.23	0.19	0.20	0.18	0.23	0.22	0.19	0.32	0.26
Q12_OC	0.16	0.12	0.29	0.09	0.15	0.20	0.19	0.05	0.11	0.22	0.23	0.22	0.24	0.19
Q20_OC	0.20	0.20	0.30	0.14	0.21	0.24	0.15	0.04	0.16	0.24	0.23	0.20	0.26	0.20
Q38_OC	0.37	0.20	0.26	0.31	0.17	0.34	0.30	0.14	0.10	0.29	0.32	0.27	0.28	0.27
Q50_OC	0.33	0.28	0.36	0.28	0.35	0.30	0.23	0.13	0.23	0.38	0.33	0.39	0.44	0.31
Q58_OC	0.30	0.27	0.30	0.26	0.36	0.37	0.29	0.14	0.24	0.37	0.42	0.30	0.39	0.28
Q28_OC	0.55	0.47	0.41	0.56	0.42	0.65	0.53	0.26	0.34	0.48	0.45	0.24	0.50	0.49
Q65_OC_R	0.21	0.24	0.15	0.24	0.15	0.21	0.23	0.20	0.18	0.22	0.20	0.12	0.18	0.22
Q66_OC	0.54	0.42	0.46	0.53	0.41	0.59	0.49	0.28	0.30	0.55	0.59	0.26	0.57	0.40
Q72_OC	0.39	0.34	0.33	0.41	0.28	0.49	0.41	0.13	0.24	0.46	0.42	0.21	0.41	0.39
Q73_OC	0.25	0.32	0.27	0.34	0.30	0.35	0.32	0.27	0.28	0.29	0.34	0.18	0.33	0.34
Q79_OC	0.39	0.47	0.45	0.35	0.30	0.47	0.39	0.27	0.32	0.41	0.37	0.22	0.47	0.34
Q4_EE_R	0.36	0.39	0.33	0.35	0.31	0.36	0.31	0.23	0.20	0.28	0.27	0.21	0.37	0.32
Q8_EE	0.35	0.33	0.44	0.37	0.37	0.50	0.35	0.23	0.32	0.44	0.35	0.28	0.48	0.33
Q32_EE	0.46	0.41	0.44	0.39	0.39	0.55	0.48	0.28	0.29	0.54	0.45	0.39	0.56	0.40
Q41_EE	0.14	0.08	0.11	0.08	0.20	0.14	0.11	-0.03	0.09	0.23	0.18	0.23	0.18	0.06
Q47_EE	0.10	0.04	0.09	0.03	0.16	0.07	0.08	0.06	0.03	0.15	0.08	0.26	0.10	0.04
Q62_EE	0.10	0.06	0.05	0.04	0.12	0.02	0.08	0.07	0.01	0.12	0.12	0.24	0.08	0.03
Q70_EE	0.07	0.01	0.06	-0.03	0.06	0.01	-0.01	-0.01	0.02	0.05	0.06	0.23	0.07	0.00
Q77_EE	0.11	0.06	0.10	0.05	0.18	0.11	0.08	0.11	0.09	0.12	0.09	0.32	0.15	0.00
Q24_EE	0.27	0.25	0.27	0.19	0.28	0.30	0.23	0.08	0.09	0.27	0.25	0.24	0.30	0.28
Q36_EE	0.03	0.05	0.12	0.01	0.15	0.09	0.07	-0.03	0.10	0.17	0.15	0.14	0.11	0.02
Q63_EE_R	0.09	0.14	0.15	0.02	0.22	0.07	0.05	0.10	0.07	0.12	0.09	0.24	0.13	0.18
Q2_RP	0.21	0.18	0.29	0.16	0.21	0.16	0.20	0.10	0.07	0.20	0.19	0.17	0.23	0.25
Q9_RP	0.21	0.18	0.34	0.15	0.25	0.21	0.18	0.22	0.23	0.21	0.20	0.18	0.26	0.16
Q17_RP	0.39	0.44	0.45	0.39	0.37	0.48	0.31	0.28	0.44	0.40	0.36	0.30	0.55	0.38
Q48_RP_R	0.21	0.20	0.21	0.20	0.23	0.26	0.17	0.26	0.15	0.20	0.20	0.12	0.24	0.25
Q52_RP	0.58	0.46	0.47	0.56	0.40	0.67	0.50	0.29	0.42	0.59	0.55	0.31	0.58	0.47
Q55_RP_R	0.48	0.45	0.48	0.39	0.38	0.51	0.40	0.33	0.29	0.44	0.48	0.30	0.48	0.48
Q64_RP	0.48	0.38	0.44	0.32	0.41	0.50	0.37	0.23	0.25	0.40	0.43	0.30	0.51	0.46
Q71_RP_R	0.17	0.10	0.25	0.02	0.09	0.14	0.12	0.02	0.11	0.13	0.15	0.18	0.25	0.16
Q74_RP	0.52	0.52	0.55	0.49	0.50	0.65	0.53	0.25	0.38	0.51	0.52	0.35	0.73	0.50

### Section 3. Correlations between Organizational Attitude Items and Other Items

	Q10_OC_R	Q11_OC	Q18_OC_R	Q27_OC_R	Q33_OC_R	Q46_OC_R	Q56_OC_R	Q57_OC_R	Q69_OC_R	Q75_OC_R	Q78_OC_R	Q82_OC_R	Q83_OC
Q15_AS_R	0.05	0.06	0.07	0.04	0.04	<b>0.13</b>	0.01	0.04	0.03	0.06	-0.02	0.02	0.02
Q29_AS	<b>-0.10</b>	0.02	0.07	0.00	-0.03	0.03	0.02	-0.03	-0.03	0.02	0.04	0.10	-0.08
Q31_AS	-0.05	0.00	0.04	0.02	0.04	0.07	0.03	0.09	-0.03	0.02	-0.03	0.06	-0.03
Q49_AS_R	0.00	0.00	-0.05	-0.04	0.02	-0.02	0.01	-0.02	0.03	0.04	-0.02	0.01	-0.01
Q61_AS_R	0.02	-0.01	0.04	-0.06	0.06	0.04	0.02	-0.06	0.09	-0.01	-0.01	0.06	-0.02
Q80_AS	0.01	0.00	0.02	0.01	-0.01	-0.03	0.06	0.02	<b>0.19</b>	0.07	0.01	-0.02	0.07
Q1_MI	<b>0.12</b>	<b>0.13</b>	-0.01	0.08	0.03	0.02	-0.03	0.03	0.00	-0.04	-0.05	-0.06	0.04
Q6_MI_R	<b>0.11</b>	0.04	0.02	0.05	0.02	0.06	0.02	0.06	-0.01	0.00	0.03	-0.01	0.05
Q14_MI	0.02	0.10	-0.01	0.01	0.01	0.03	-0.04	0.03	-0.03	-0.03	0.01	-0.04	0.03
Q21_MI	0.08	0.01	-0.02	0.00	0.04	-0.03	-0.02	0.04	0.03	-0.02	-0.07	0.02	0.04
Q22_MI_R	-0.01	0.05	0.04	-0.02	-0.02	0.00	0.08	0.00	-0.06	-0.01	0.06	-0.05	-0.02
Q30_MI	0.04	0.03	-0.03	-0.01	0.01	-0.03	0.00	-0.01	-0.02	-0.05	-0.02	-0.01	0.02
Q39_MI	0.03	0.03	-0.05	-0.04	-0.01	-0.02	0.00	0.06	0.04	0.02	-0.01	0.03	0.05
Q42_MI_R	0.02	0.02	0.01	0.03	-0.01	0.02	0.00	0.05	0.00	0.02	0.07	<b>0.12</b>	-0.01
Q51_MI	-0.04	-0.05	-0.04	-0.06	-0.08	-0.03	-0.01	-0.04	-0.02	-0.04	-0.01	-0.01	0.00
Q54_MI	-0.03	0.06	0.01	-0.04	-0.06	-0.02	0.02	-0.04	-0.05	-0.08	0.00	0.03	0.00
Q59_MI	-0.01	0.05	0.02	0.01	-0.03	-0.01	0.02	0.00	-0.01	0.00	0.03	0.06	0.06
Q60_MI	<b>-0.10</b>	0.06	-0.03	-0.07	<b>-0.11</b>	-0.02	0.02	-0.07	-0.03	-0.07	-0.02	-0.07	<b>-0.10</b>
Q81_MI	-0.02	0.09	-0.03	-0.07	-0.05	-0.01	0.06	-0.01	-0.01	-0.02	0.01	-0.01	0.02
Q84_MI_R	<b>0.11</b>	0.06	0.07	0.09	0.06	0.05	<b>0.10</b>	0.10	<b>0.13</b>	<b>0.12</b>	0.07	0.04	0.06
Q10_OC_R	<b>1.00</b>	0.02	-0.05	0.02	0.07	-0.03	-0.02	0.04	0.02	-0.04	-0.03	0.02	0.01
Q11_OC	0.56	<b>1.00</b>	0.02	0.03	-0.03	0.00	-0.01	-0.04	0.03	0.01	-0.02	-0.03	-0.01
Q18_OC_R	0.49	0.46	<b>1.00</b>	0.05	0.01	0.05	0.00	-0.02	0.05	0.08	0.07	0.00	-0.01
Q27_OC_R	0.65	0.54	0.56	<b>1.00</b>	0.05	0.02	0.03	0.03	-0.02	0.00	0.01	0.00	0.02
Q33_OC_R	0.71	0.50	0.54	0.65	<b>1.00</b>	-0.01	0.01	0.02	-0.02	-0.01	0.02	0.02	-0.01
Q46_OC_R	0.52	0.45	0.50	0.54	0.53	<b>1.00</b>	-0.01	0.02	-0.04	0.04	0.06	-0.01	0.03
Q56_OC_R	0.43	0.36	0.37	0.46	0.45	0.37	<b>1.00</b>	0.05	0.02	0.00	0.03	0.01	-0.03
Q57_OC_R	0.62	0.43	0.45	0.58	0.59	0.50	0.45	<b>1.00</b>	-0.02	-0.01	0.00	-0.04	0.01
Q69_OC_R	0.57	0.47	0.49	0.50	0.51	0.41	0.40	0.46	<b>1.00</b>	0.04	0.03	0.04	0.00
Q75_OC_R	0.53	0.47	0.54	0.53	0.54	0.51	0.39	0.49	0.51	<b>1.00</b>	<b>0.11</b>	0.05	0.01
Q78_OC_R	0.55	0.45	0.54	0.56	0.58	0.54	0.44	0.51	0.51	0.60	<b>1.00</b>	0.02	0.00
Q82_OC_R	0.23	0.14	0.17	0.20	0.22	0.17	0.15	0.14	0.21	0.23	0.20	<b>1.00</b>	0.02
Q83_OC	0.65	0.51	0.51	0.63	0.61	0.57	0.41	0.57	0.52	0.56	0.55	0.22	<b>1.00</b>

Q5_OC_R	0.31	0.28	0.26	0.23	0.24	0.33	0.21	0.31	0.19	0.21	0.25	0.12	0.26
Q12_OC	0.11	0.23	0.20	0.17	0.11	0.17	0.15	0.22	0.17	0.22	0.20	0.14	0.13
Q20_OC	0.18	0.16	0.16	0.18	0.17	0.25	0.16	0.19	0.11	0.22	0.19	0.11	0.24
Q38_OC	0.30	0.27	0.25	0.30	0.22	0.22	0.20	0.33	0.21	0.26	0.24	0.12	0.29
Q50_OC	0.33	0.35	0.29	0.25	0.23	0.28	0.30	0.25	0.24	0.23	0.28	0.17	0.28
Q58_OC	0.30	0.30	0.29	0.24	0.23	0.27	0.27	0.25	0.34	0.25	0.31	0.15	0.31
Q28_OC	0.58	0.42	0.39	0.54	0.58	0.50	0.36	0.49	0.47	0.48	0.47	0.14	0.57
Q65_OC_R	0.28	0.17	0.18	0.21	0.27	0.18	0.09	0.28	0.17	0.20	0.16	0.13	0.26
Q66_OC	0.59	0.48	0.47	0.50	0.56	0.44	0.43	0.50	0.43	0.48	0.51	0.19	0.59
Q72_OC	0.43	0.32	0.35	0.39	0.45	0.41	0.33	0.38	0.36	0.40	0.42	0.11	0.50
Q73_OC	0.37	0.26	0.31	0.32	0.37	0.32	0.21	0.37	0.27	0.41	0.40	0.14	0.39
Q79_OC	0.41	0.36	0.23	0.36	0.40	0.40	0.30	0.39	0.29	0.34	0.34	0.07	0.47
Q4_EE_R	0.43	0.30	0.27	0.36	0.38	0.39	0.27	0.37	0.35	0.36	0.35	0.10	0.38
Q8_EE	0.37	0.38	0.32	0.34	0.38	0.33	0.28	0.30	0.30	0.32	0.32	0.15	0.37
Q32_EE	0.47	0.46	0.41	0.46	0.48	0.44	0.35	0.43	0.45	0.44	0.49	0.24	0.44
Q41_EE	0.03	0.18	0.16	0.06	0.03	0.11	0.11	0.03	0.10	0.12	0.19	0.15	0.13
Q47_EE	-0.02	0.14	0.05	-0.01	-0.01	0.01	-0.04	0.01	0.00	-0.02	0.08	0.08	0.03
Q62_EE	-0.03	0.08	0.03	0.03	-0.03	0.01	0.04	-0.03	-0.04	-0.01	0.10	0.07	0.07
Q70_EE	-0.04	0.08	-0.07	-0.05	-0.06	-0.05	-0.02	-0.01	-0.10	-0.02	0.02	0.03	-0.01
Q77_EE	0.00	0.12	0.02	-0.01	0.00	0.03	0.08	0.02	0.00	0.02	0.12	0.15	0.05
Q24_EE	0.26	0.25	0.23	0.27	0.16	0.18	0.18	0.24	0.17	0.17	0.16	0.16	0.19
Q36_EE	-0.03	0.13	0.02	0.02	-0.02	0.08	0.14	-0.02	-0.01	0.09	0.15	0.10	0.06
Q63_EE_R	0.08	0.14	0.08	0.15	0.11	0.11	0.16	0.09	0.11	0.10	0.27	0.15	0.12
Q2_RP	0.19	0.23	0.28	0.23	0.15	0.19	0.11	0.19	0.20	0.18	0.15	0.11	0.20
Q9_RP	0.17	0.21	0.23	0.14	0.18	0.14	0.13	0.15	0.18	0.19	0.18	0.10	0.21
Q17_RP	0.41	0.41	0.28	0.36	0.38	0.38	0.26	0.31	0.31	0.35	0.34	0.09	0.41
Q48_RP_R	0.29	0.22	0.26	0.24	0.28	0.21	0.18	0.23	0.29	0.28	0.32	0.20	0.25
Q52_RP	0.57	0.46	0.45	0.50	0.54	0.46	0.40	0.50	0.44	0.46	0.46	0.19	0.61
Q55_RP_R	0.51	0.47	0.42	0.49	0.49	0.48	0.40	0.52	0.48	0.52	0.50	0.13	0.52
Q64_RP	0.45	0.47	0.46	0.46	0.45	0.48	0.36	0.43	0.44	0.51	0.50	0.11	0.48
Q71_RP_R	0.10	0.24	0.04	0.13	0.08	0.16	0.11	0.13	0.16	0.15	0.15	0.14	0.05
Q74_RP	0.61	0.49	0.40	0.48	0.56	0.48	0.42	0.51	0.41	0.47	0.51	0.16	0.59



## Section 4. Correlations between Preventive Safety Items and Other Items

	Q5_OC_R	Q12_OC	Q20_OC	Q38_OC	Q50_OC	Q58_OC
Q15_AS_R	0.07	0.02	0.02	<b>0.12</b>	0.03	0.03
Q29_AS	0.07	<b>0.18</b>	0.05	<b>0.12</b>	0.06	0.09
Q31_AS	0.06	0.09	0.04	<b>0.24</b>	0.10	0.09
Q49_AS_R	0.00	-0.07	-0.07	-0.03	-0.07	-0.06
Q61_AS_R	-0.01	-0.08	<b>-0.16</b>	<b>-0.14</b>	<b>-0.15</b>	<b>-0.12</b>
Q80_AS	0.06	0.08	-0.02	0.04	-0.06	0.02
Q1_MI	-0.01	-0.06	-0.05	<b>0.10</b>	-0.04	-0.03
Q6_MI_R	<b>0.12</b>	-0.07	-0.02	-0.03	-0.04	-0.01
Q14_MI	<b>0.15</b>	0.08	0.07	0.02	0.02	0.00
Q21_MI	-0.04	<b>-0.10</b>	-0.08	0.08	-0.04	-0.02
Q22_MI_R	0.07	-0.03	0.01	-0.04	0.05	<b>0.10</b>
Q30_MI	-0.05	-0.04	-0.03	0.06	-0.10	0.02
Q39_MI	-0.04	-0.01	-0.08	0.07	-0.10	0.00
Q42_MI_R	0.06	-0.07	-0.10	0.00	-0.06	-0.03
Q51_MI	0.02	-0.03	0.01	-0.06	0.00	0.05
Q54_MI	-0.01	0.00	0.00	0.04	0.03	0.07
Q59_MI	-0.02	0.02	-0.01	0.08	-0.02	<b>0.12</b>
Q60_MI	0.04	0.09	0.05	<b>0.11</b>	<b>0.17</b>	<b>0.10</b>
Q81_MI	0.05	0.01	0.00	0.01	0.05	0.05
Q84_MI_R	0.02	-0.01	-0.03	0.03	-0.03	-0.02
Q10_OC_R	0.07	-0.10	-0.05	0.06	-0.01	0.01
Q11_OC	0.09	0.06	-0.03	0.07	0.08	0.06
Q18_OC_R	0.06	0.03	-0.03	0.06	0.02	0.05
Q27_OC_R	0.00	-0.03	-0.04	0.07	-0.07	-0.04
Q33_OC_R	0.01	-0.09	-0.05	-0.01	-0.10	-0.05
Q46_OC_R	<b>0.13</b>	0.00	0.06	0.02	0.00	0.03
Q56_OC_R	0.04	0.01	0.00	0.03	0.07	0.07
Q57_OC_R	<b>0.10</b>	0.04	-0.01	<b>0.12</b>	-0.05	-0.01
Q69_OC_R	-0.01	0.00	-0.08	0.01	-0.03	0.10
Q75_OC_R	0.01	0.04	0.02	0.06	-0.06	0.00
Q78_OC_R	0.04	0.02	-0.01	0.03	-0.02	0.05
Q82_OC_R	0.05	0.07	0.04	0.05	0.07	0.06
Q83_OC	0.03	-0.06	0.02	0.06	-0.05	0.02
Q5_OC_R	<b>1.00</b>	0.02	0.05	-0.05	0.04	0.01
Q12_OC	0.21	<b>1.00</b>	0.04	0.00	0.03	-0.01
Q20_OC	0.26	0.22	<b>1.00</b>	-0.05	0.00	-0.04
Q38_OC	0.16	0.19	0.16	<b>1.00</b>	-0.03	-0.05
Q50_OC	0.35	0.29	0.30	0.28	<b>1.00</b>	0.04
Q58_OC	0.27	0.22	0.22	0.22	0.42	<b>1.00</b>
Q28_OC	0.19	0.14	0.19	0.25	0.25	0.28
Q65_OC_R	0.07	0.01	0.09	-0.01	0.09	0.08
Q66_OC	0.23	0.17	0.24	0.25	0.32	0.38
Q72_OC	0.13	0.14	0.23	0.17	0.28	0.31
Q73_OC	0.15	0.08	0.13	0.13	0.16	0.15
Q79_OC	0.31	0.14	0.24	0.17	0.28	0.28
Q4_EE_R	0.27	0.07	0.15	0.22	0.24	0.20
Q8_EE	0.20	0.18	0.31	0.20	0.35	0.25
Q32_EE	0.23	0.26	0.24	0.30	0.32	0.32
Q41_EE	0.15	0.17	0.19	0.17	0.34	0.23
Q47_EE	0.05	0.08	0.14	0.08	0.26	0.22

Q62_EE	0.12	0.11	0.24	0.17	0.24	0.18
Q70_EE	0.09	0.08	0.17	0.14	0.21	0.12
Q77_EE	0.17	0.19	0.08	0.14	0.32	0.22
Q24_EE	0.21	0.22	0.27	0.34	0.29	0.29
Q36_EE	0.12	0.22	0.20	0.17	0.21	0.26
Q63_EE_R	0.14	0.11	0.11	0.19	0.23	0.14
Q2_RP	0.12	0.22	0.20	0.13	0.21	0.21
Q9_RP	0.21	0.22	0.27	0.13	0.31	0.21
Q17_RP	0.26	0.12	0.29	0.21	0.39	0.31
Q48_RP_R	0.14	0.14	0.04	-0.03	0.11	0.08
Q52_RP	0.26	0.16	0.21	0.28	0.31	0.29
Q55_RP_R	0.27	0.19	0.19	0.20	0.28	0.22
Q64_RP	0.21	0.27	0.20	0.26	0.30	0.27
Q71_RP_R	0.19	0.20	0.14	0.18	0.22	0.06
Q74_RP	0.29	0.20	0.26	0.26	0.31	0.31

## Section 5. Correlations between Resource Commitment to Safety Items and Other Items

	Q28_OC	Q65_OC_R	Q66_OC	Q72_OC	Q73_OC	Q79_OC
Q15_AS_R	0.05	-0.01	0.02	0.04	0.01	0.03
Q29_AS	-0.01	-0.09	-0.02	-0.05	0.02	-0.02
Q31_AS	-0.01	-0.05	0.01	0.07	-0.01	-0.02
Q49_AS_R	0.01	0.06	0.02	0.05	0.04	0.05
Q61_AS_R	-0.04	0.01	0.01	-0.08	0.00	-0.08
Q80_AS	0.05	-0.04	-0.01	0.03	0.05	-0.01
Q1_MI	0.03	-0.02	0.02	-0.03	-0.10	-0.02
Q6_MI_R	0.01	0.04	-0.04	-0.03	0.02	<b>0.11</b>
Q14_MI	-0.07	-0.06	-0.02	-0.06	-0.05	0.07
Q21_MI	<b>0.10</b>	0.04	0.08	0.04	0.04	-0.01
Q22_MI_R	0.00	-0.04	-0.01	-0.07	0.02	-0.03
Q30_MI	0.09	-0.03	0.03	0.03	-0.03	0.03
Q39_MI	0.07	0.03	0.03	0.04	0.01	0.02
Q42_MI_R	-0.01	0.08	0.01	-0.09	0.09	0.06
Q51_MI	0.02	0.04	-0.02	-0.02	0.06	0.07
Q54_MI	-0.01	0.00	0.06	0.06	-0.04	0.02
Q59_MI	-0.04	-0.01	<b>0.10</b>	0.03	0.02	-0.02
Q60_MI	-0.07	-0.01	-0.05	-0.04	-0.03	-0.02
Q81_MI	-0.04	-0.06	0.03	-0.03	-0.04	0.04
Q84_MI_R	0.02	0.01	-0.07	0.00	0.03	-0.04
Q10_OC_R	0.03	0.05	0.04	-0.02	0.00	-0.02
Q11_OC	-0.03	-0.03	0.04	-0.04	-0.04	0.00
Q18_OC_R	-0.06	-0.02	0.03	-0.02	0.01	<b>-0.12</b>
Q27_OC_R	0.01	-0.02	-0.02	-0.04	-0.03	-0.05
Q33_OC_R	0.05	0.04	0.03	0.02	0.01	-0.02
Q46_OC_R	0.04	-0.02	-0.02	0.03	0.01	0.04
Q56_OC_R	-0.02	-0.08	0.05	0.02	-0.04	0.00
Q57_OC_R	0.01	0.07	0.02	-0.02	0.05	0.01
Q69_OC_R	0.02	-0.02	-0.02	0.00	-0.03	-0.07
Q75_OC_R	0.01	-0.01	0.01	0.01	0.09	-0.03
Q78_OC_R	-0.02	-0.05	0.03	0.03	0.07	-0.04
Q82_OC_R	-0.04	0.06	0.02	-0.03	0.02	-0.07
Q83_OC	0.04	0.03	0.06	0.07	0.03	0.05
Q5_OC_R	-0.03	-0.03	0.01	-0.05	0.00	<b>0.14</b>
Q12_OC	-0.05	-0.07	-0.02	-0.02	-0.05	-0.01
Q20_OC	-0.03	-0.01	0.03	0.05	-0.01	0.07
Q38_OC	0.02	<b>-0.11</b>	0.02	-0.01	-0.02	0.00
Q50_OC	-0.06	-0.05	0.01	0.02	-0.05	0.03
Q58_OC	0.01	-0.04	<b>0.10</b>	0.09	-0.04	0.06
Q28_OC	<b>1.00</b>	0.00	-0.02	0.05	0.01	0.02
Q65_OC_R	0.25	<b>1.00</b>	0.00	0.00	0.09	0.03
Q66_OC	0.55	0.25	<b>1.00</b>	0.03	-0.01	0.00
Q72_OC	0.51	0.20	0.49	<b>1.00</b>	0.03	-0.04
Q73_OC	0.39	0.26	0.37	0.34	<b>1.00</b>	0.00
Q79_OC	0.47	0.23	0.45	0.32	0.30	<b>1.00</b>
Q4_EE_R	0.33	0.10	0.38	0.27	0.21	0.32
Q8_EE	0.37	0.12	0.42	0.30	0.25	0.39
Q32_EE	0.44	0.22	0.46	0.36	0.29	0.34
Q41_EE	0.11	-0.05	0.17	0.12	0.06	0.07
Q47_EE	0.05	-0.03	0.01	0.04	0.00	0.08
Q62_EE	-0.03	-0.07	0.07	0.02	-0.05	0.00
Q70_EE	-0.08	-0.10	0.00	-0.02	-0.05	0.05

Q77_EE	0.09	0.01	0.09	-0.01	0.04	0.14
Q24_EE	0.16	0.10	0.21	0.17	0.13	0.22
Q36_EE	0.05	0.01	0.16	0.04	0.10	0.06
Q63_EE_R	0.05	-0.07	0.01	0.04	0.01	0.05
Q2_RP	0.15	0.10	0.14	0.13	0.05	0.15
Q9_RP	0.14	0.05	0.22	0.18	0.13	0.18
Q17_RP	0.41	0.17	0.38	0.31	0.21	0.41
Q48_RP_R	0.23	0.14	0.23	0.16	0.26	0.14
Q52_RP	0.55	0.25	0.55	0.42	0.39	0.43
Q55_RP_R	0.46	0.20	0.47	0.34	0.40	0.43
Q64_RP	0.40	0.09	0.42	0.30	0.31	0.31
Q71_RP_R	0.13	-0.12	0.04	0.08	0.07	0.08
Q74_RP	0.51	0.24	0.57	0.44	0.43	0.49

## Section 6. Correlations between Pilot Input Items and Other Items

	Q4_EE_R	Q8_EE	Q32_EE
Q15_AS_R	0.06	0.05	0.03
Q29_AS	0.01	0.06	0.03
Q31_AS	-0.01	-0.02	0.01
Q49_AS_R	0.10	-0.01	0.04
Q61_AS_R	0.03	<b>-0.10</b>	-0.03
Q80_AS	0.00	-0.04	-0.02
Q1_MI	0.02	-0.08	-0.02
Q6_MI_R	0.09	-0.04	-0.01
Q14_MI	0.02	0.05	-0.01
Q21_MI	0.05	0.00	-0.03
Q22_MI_R	0.03	0.03	0.00
Q30_MI	0.00	0.04	0.02
Q39_MI	0.01	-0.03	0.05
Q42_MI_R	0.06	0.01	0.03
Q51_MI	0.00	0.06	0.00
Q54_MI	-0.04	0.03	0.08
Q59_MI	-0.04	-0.05	-0.01
Q60_MI	0.01	0.03	0.10
Q81_MI	0.01	0.03	0.05
Q84_MI_R	0.01	-0.06	-0.04
Q10_OC_R	0.10	-0.05	-0.01
Q11_OC	0.03	0.03	0.06
Q18_OC_R	0.00	-0.03	0.01
Q27_OC_R	0.04	-0.06	0.01
Q33_OC_R	0.05	-0.03	0.02
Q46_OC_R	<b>0.11</b>	-0.03	0.04
Q56_OC_R	0.04	-0.02	0.02
Q57_OC_R	0.07	-0.08	0.01
Q69_OC_R	0.07	-0.04	0.05
Q75_OC_R	0.07	-0.04	0.03
Q78_OC_R	0.05	-0.05	0.07
Q82_OC_R	-0.01	0.02	0.09
Q83_OC	0.05	-0.04	-0.03
Q5_OC_R	<b>0.10</b>	-0.02	-0.02
Q12_OC	-0.08	-0.01	0.05
Q20_OC	-0.02	<b>0.10</b>	-0.01
Q38_OC	0.04	-0.02	0.05
Q50_OC	-0.01	0.03	-0.04
Q58_OC	-0.01	-0.02	0.01
Q28_OC	0.01	-0.02	-0.01
Q65_OC_R	-0.04	-0.06	0.02
Q66_OC	0.07	0.02	0.01
Q72_OC	0.01	-0.02	0.00
Q73_OC	0.00	-0.01	-0.01
Q79_OC	0.08	0.08	-0.02
Q4_EE_R	<b>1.00</b>	-0.01	-0.05
Q8_EE	0.30	<b>1.00</b>	0.05
Q32_EE	0.30	0.49	<b>1.00</b>
Q41_EE	0.04	0.16	0.17
Q47_EE	-0.02	0.13	0.07

Q62_EE	0.01	0.07	0.07
Q70_EE	0.02	0.06	0.05
Q77_EE	0.10	0.12	0.05
Q24_EE	0.14	0.19	0.27
Q36_EE	0.00	0.09	0.08
Q63_EE_R	0.11	0.07	0.11
Q2_RP	0.06	0.23	0.33
Q9_RP	0.10	0.35	0.30
Q17_RP	0.26	0.45	0.42
Q48_RP_R	0.18	0.16	0.26
Q52_RP	0.39	0.43	0.44
Q55_RP_R	0.36	0.34	0.45
Q64_RP	0.30	0.37	0.46
Q71_RP_R	0.07	0.10	0.22
Q74_RP	0.37	0.46	0.53

## Section 7. Correlations between Peer Influence Items and Other Items

	Q41_EE	Q47_EE	Q62_EE	Q70_EE	Q77_EE
Q15_AS_R	0.06	-0.06	0.04	0.00	0.01
Q29_AS	<b>0.16</b>	0.10	0.08	-0.02	<b>0.16</b>
Q31_AS	<b>0.19</b>	<b>0.11</b>	<b>0.11</b>	<b>0.16</b>	<b>0.18</b>
Q49_AS_R	0.00	-0.09	-0.08	<b>-0.13</b>	-0.01
Q61_AS_R	-0.04	<b>-0.15</b>	<b>-0.23</b>	<b>-0.25</b>	-0.03
Q80_AS	0.08	-0.01	0.05	-0.07	0.03
Q1_MI	0.06	0.02	0.01	-0.03	0.02
Q6_MI_R	0.01	-0.03	-0.02	-0.08	-0.03
Q14_MI	0.04	0.01	-0.03	-0.04	0.02
Q21_MI	0.00	-0.04	-0.04	<b>-0.12</b>	-0.03
Q22_MI_R	<b>0.14</b>	0.10	0.04	-0.02	<b>0.11</b>
Q30_MI	0.05	-0.02	-0.08	-0.10	0.00
Q39_MI	0.04	0.00	0.00	<b>-0.10</b>	0.00
Q42_MI_R	-0.07	0.02	0.02	-0.06	0.06
Q51_MI	0.04	-0.02	-0.04	-0.04	0.03
Q54_MI	<b>0.15</b>	0.07	0.03	-0.04	0.03
Q59_MI	<b>0.11</b>	0.00	0.03	-0.03	0.01
Q60_MI	<b>0.18</b>	<b>0.21</b>	<b>0.18</b>	<b>0.17</b>	<b>0.26</b>
Q81_MI	0.09	0.01	-0.02	-0.03	0.05
Q84_MI_R	-0.01	-0.03	-0.05	-0.09	-0.08
Q10_OC_R	0.01	-0.04	-0.06	-0.06	-0.02
Q11_OC	<b>0.17</b>	<b>0.13</b>	0.06	0.06	0.10
Q18_OC_R	<b>0.14</b>	0.04	0.01	-0.09	0.00
Q27_OC_R	0.04	-0.02	0.00	-0.07	-0.03
Q33_OC_R	0.01	-0.03	-0.05	-0.09	-0.02
Q46_OC_R	0.09	0.00	-0.01	-0.07	0.01
Q56_OC_R	0.09	-0.05	0.03	-0.04	0.06
Q57_OC_R	0.01	-0.01	-0.05	-0.04	0.00
Q69_OC_R	0.08	-0.02	-0.06	<b>-0.12</b>	-0.02
Q75_OC_R	0.10	-0.04	-0.03	-0.04	0.00
Q78_OC_R	<b>0.17</b>	0.06	0.08	0.00	0.10
Q82_OC_R	<b>0.14</b>	0.07	0.06	0.02	<b>0.14</b>
Q83_OC	<b>0.11</b>	0.01	0.05	-0.04	0.03
Q5_OC_R	0.01	-0.09	-0.04	-0.08	0.01
Q12_OC	0.04	-0.04	-0.04	-0.07	0.05
Q20_OC	0.05	0.00	0.08	0.00	-0.08
Q38_OC	0.02	-0.06	0.00	-0.04	-0.03
Q50_OC	<b>0.14</b>	0.05	0.01	-0.04	0.09
Q58_OC	0.06	0.05	-0.03	<b>-0.10</b>	0.02
Q28_OC	0.08	0.02	-0.06	<b>-0.12</b>	0.05
Q65_OC_R	-0.06	-0.04	-0.09	<b>-0.11</b>	0.00
Q66_OC	<b>0.13</b>	-0.02	0.03	-0.04	0.05
Q72_OC	0.09	0.02	-0.01	-0.05	-0.04
Q73_OC	0.04	-0.02	-0.07	-0.07	0.01
Q79_OC	0.04	0.06	-0.03	0.02	<b>0.12</b>
Q4_EE_R	-0.01	-0.07	-0.05	-0.05	0.04
Q8_EE	0.10	0.06	0.00	-0.03	0.04
Q32_EE	0.09	0.00	-0.01	-0.05	-0.04
Q41_EE	<b>1.00</b>	0.01	-0.07	-0.04	0.06
Q47_EE	0.32	<b>1.00</b>	0.02	0.02	-0.05
Q62_EE	0.29	0.38	<b>1.00</b>	0.07	-0.02
Q70_EE	0.35	0.41	0.52	<b>1.00</b>	-0.01

Q77_EE	0.43	0.31	0.39	0.44	<b>1.00</b>
Q24_EE	0.20	0.10	0.12	0.13	0.26
Q36_EE	0.34	0.11	0.16	0.10	0.27
Q63_EE_R	0.23	0.21	0.18	0.22	0.26
Q2_RP	0.18	0.13	0.03	0.09	0.02
Q9_RP	0.17	0.08	0.20	0.09	0.20
Q17_RP	0.10	0.14	0.13	0.06	0.13
Q48_RP_R	0.00	0.00	-0.01	-0.07	0.04
Q52_RP	0.14	0.04	0.07	0.02	0.12
Q55_RP_R	0.11	0.04	0.01	-0.01	0.03
Q64_RP	0.18	0.07	0.07	0.06	0.05
Q71_RP_R	0.18	0.09	0.05	0.16	0.14
Q74_RP	0.13	0.00	0.01	-0.01	0.07



## Section 8. Correlations between Pilot Responsibility/Commitment Items and Other Items

	Pilot Responsibility/Commitment		
	Q24_EE	Q36_EE	Q63_EE_R
Q15_AS_R	0.02	-0.05	-0.04
Q29_AS	<b>0.21</b>	0.05	0.10
Q31_AS	<b>0.28</b>	<b>0.16</b>	0.08
Q49_AS_R	0.00	-0.10	<b>-0.13</b>
Q61_AS_R	-0.03	-0.09	-0.03
Q80_AS	0.01	-0.09	-0.05
Q1_MI	0.06	<b>-0.13</b>	-0.07
Q6_MI_R	0.07	-0.09	0.00
Q14_MI	0.08	-0.02	0.00
Q21_MI	0.01	<b>-0.13</b>	<b>-0.11</b>
Q22_MI_R	<b>0.11</b>	0.02	0.10
Q30_MI	0.08	-0.08	<b>-0.10</b>
Q39_MI	0.05	-0.07	-0.09
Q42_MI_R	-0.03	<b>-0.11</b>	0.02
Q51_MI	-0.03	0.00	-0.03
Q54_MI	0.08	0.02	-0.03
Q59_MI	0.06	0.00	-0.06
Q60_MI	<b>0.11</b>	0.05	<b>0.14</b>
Q81_MI	0.09	-0.05	-0.03
Q84_MI_R	0.09	<b>-0.13</b>	0.04
Q10_OC_R	0.09	<b>-0.16</b>	-0.05
Q11_OC	<b>0.11</b>	0.02	0.03
Q18_OC_R	0.09	-0.09	-0.03
Q27_OC_R	<b>0.11</b>	<b>-0.11</b>	0.03
Q33_OC_R	0.00	<b>-0.15</b>	-0.02
Q46_OC_R	0.03	-0.04	0.00
Q56_OC_R	0.06	0.05	0.07
Q57_OC_R	0.09	<b>-0.13</b>	-0.02
Q69_OC_R	0.03	<b>-0.12</b>	0.01
Q75_OC_R	0.02	-0.03	-0.01
Q78_OC_R	0.02	0.04	<b>0.15</b>
Q82_OC_R	<b>0.10</b>	0.06	<b>0.11</b>
Q83_OC	0.03	-0.07	-0.01
Q5_OC_R	-0.01	-0.05	-0.03
Q12_OC	0.03	0.06	-0.04
Q20_OC	0.05	0.03	-0.06
Q38_OC	<b>0.12</b>	-0.01	0.02
Q50_OC	-0.02	-0.04	-0.01
Q58_OC	0.02	0.05	-0.07
Q28_OC	0.02	-0.06	-0.05
Q65_OC_R	0.04	-0.04	<b>-0.11</b>
Q66_OC	0.07	0.05	-0.09
Q72_OC	0.05	-0.04	-0.05
Q73_OC	0.04	0.02	-0.06
Q79_OC	<b>0.11</b>	-0.02	-0.04
Q4_EE_R	0.02	-0.10	0.02
Q8_EE	0.04	-0.03	-0.05
Q32_EE	0.10	-0.06	-0.03
Q41_EE	0.01	<b>0.19</b>	0.08
Q47_EE	-0.08	-0.04	0.06

Q62_EE	-0.10	-0.01	0.01
Q70_EE	<b>-0.10</b>	-0.08	0.04
Q77_EE	0.04	0.09	0.10
Q24_EE	<b>1.00</b>	-0.02	-0.02
Q36_EE	0.23	<b>1.00</b>	0.07
Q63_EE_R	0.22	0.27	<b>1.00</b>
Q2_RP	0.25	0.13	0.12
Q9_RP	0.25	0.16	0.08
Q17_RP	0.20	0.09	0.10
Q48_RP_R	0.13	-0.01	0.08
Q52_RP	0.18	0.06	0.05
Q55_RP_R	0.20	0.10	0.13
Q64_RP	0.23	0.11	0.07
Q71_RP_R	0.16	0.20	0.23
Q74_RP	0.28	0.11	0.08

## Section 9. Correlations between Reporting System Items and Other Items

	Q2_RP	Q9_RP	Q17_RP	Q48_RP_R	Q52_RP	Q55_RP_R	Q64_RP	Q71_RP_R	Q74_RP
Q15_AS_R	-0.04	0.02	0.07	-0.04	0.00	0.05	0.05	-0.02	0.00
Q29_AS	-0.06	<b>0.12</b>	-0.01	-0.04	-0.05	-0.01	0.07	0.08	0.00
Q31_AS	-0.03	0.06	-0.04	-0.08	0.02	-0.02	0.01	<b>0.11</b>	0.02
Q49_AS_R	-0.09	-0.05	0.01	<b>0.12</b>	0.07	0.08	-0.03	-0.07	0.00
Q61_AS_R	-0.05	-0.08	-0.08	<b>0.19</b>	-0.03	0.03	0.02	-0.06	-0.04
Q80_AS	0.00	-0.05	-0.07	0.03	-0.03	0.09	0.09	0.03	0.01
Q1_MI	0.01	-0.03	-0.04	-0.04	0.04	-0.01	0.02	0.01	-0.05
Q6_MI_R	0.00	-0.03	0.06	-0.02	-0.02	0.02	-0.03	-0.04	0.02
Q14_MI	<b>0.10</b>	<b>0.11</b>	0.05	-0.02	-0.03	0.03	0.01	<b>0.10</b>	0.02
Q21_MI	-0.01	-0.06	0.02	-0.02	0.08	-0.04	-0.09	<b>-0.12</b>	0.00
Q22_MI_R	0.05	0.06	0.02	0.03	-0.05	-0.02	0.03	-0.04	0.03
Q30_MI	-0.06	-0.05	0.01	-0.01	0.09	-0.02	0.00	-0.03	0.04
Q39_MI	0.02	-0.03	-0.07	-0.05	0.02	-0.04	-0.05	-0.02	0.02
Q42_MI_R	0.00	0.09	0.05	<b>0.13</b>	0.00	0.07	-0.02	-0.06	-0.05
Q51_MI	-0.06	0.08	<b>0.17</b>	0.00	0.09	-0.01	-0.03	0.01	0.04
Q54_MI	0.01	-0.01	0.00	-0.04	0.07	-0.02	-0.04	-0.02	-0.02
Q59_MI	0.00	-0.03	-0.04	-0.03	0.03	0.01	-0.01	0.00	-0.02
Q60_MI	0.05	0.04	0.05	-0.03	-0.02	0.01	0.02	0.09	0.02
Q81_MI	0.03	0.01	<b>0.10</b>	-0.03	0.01	-0.04	0.02	0.08	<b>0.13</b>
Q84_MI_R	0.07	-0.06	-0.01	0.02	-0.03	0.03	0.03	0.01	-0.02
Q10_OC_R	-0.01	-0.07	-0.02	0.04	0.02	0.01	-0.02	-0.06	0.04
Q11_OC	0.07	0.01	0.05	0.01	0.01	0.07	0.09	<b>0.11</b>	0.02
Q18_OC_R	<b>0.11</b>	0.03	-0.07	0.05	0.00	0.02	0.08	-0.09	-0.07
Q27_OC_R	0.04	-0.09	-0.05	0.00	-0.02	0.02	0.01	-0.02	-0.06
Q33_OC_R	-0.05	-0.06	-0.04	0.03	0.00	0.01	-0.01	-0.08	0.00
Q46_OC_R	0.03	-0.06	0.02	0.00	0.00	0.07	0.09	0.03	0.00
Q56_OC_R	-0.03	-0.04	-0.04	0.01	0.02	0.06	0.04	0.00	0.02
Q57_OC_R	0.01	-0.06	-0.07	0.01	0.01	0.08	0.02	-0.01	0.01
Q69_OC_R	0.03	-0.02	-0.04	0.08	-0.01	0.07	0.05	0.03	-0.06
Q75_OC_R	0.00	-0.02	-0.02	0.06	-0.01	0.09	<b>0.11</b>	0.01	-0.02
Q78_OC_R	-0.03	-0.03	-0.04	<b>0.10</b>	-0.02	0.06	0.09	0.01	0.01
Q82_OC_R	0.05	0.02	-0.05	<b>0.12</b>	0.02	-0.03	-0.04	0.09	-0.02
Q83_OC	0.01	-0.02	-0.01	0.01	0.08	0.05	0.03	<b>-0.11</b>	0.03
Q5_OC_R	0.03	<b>0.10</b>	0.07	0.02	0.01	0.05	0.00	<b>0.12</b>	0.04

Q12_OC	<b>0.14</b>	<b>0.13</b>	-0.05	0.04	-0.06	0.00	0.09	<b>0.14</b>	-0.02
Q20_OC	<b>0.12</b>	<b>0.16</b>	<b>0.10</b>	-0.07	-0.03	-0.03	-0.01	0.07	0.00
Q38_OC	0.03	0.02	0.01	<b>-0.15</b>	0.02	-0.03	0.05	<b>0.11</b>	-0.01
Q50_OC	0.08	<b>0.15</b>	<b>0.11</b>	-0.06	-0.04	-0.04	-0.01	<b>0.12</b>	-0.06
Q58_OC	0.10	0.07	0.07	-0.07	-0.02	-0.06	0.00	-0.03	-0.01
Q28_OC	-0.04	-0.09	0.01	0.00	0.04	0.00	-0.03	-0.01	-0.02
Q65_OC_R	0.02	-0.04	0.00	0.04	0.03	0.00	-0.10	<b>-0.19</b>	0.01
Q66_OC	-0.05	0.00	-0.02	0.00	0.04	0.01	-0.02	<b>-0.10</b>	0.04
Q72_OC	-0.02	0.00	-0.01	-0.03	0.01	-0.03	-0.06	-0.04	0.01
Q73_OC	-0.07	-0.02	-0.06	0.10	0.05	0.10	0.02	-0.03	0.08
Q79_OC	0.01	0.00	<b>0.10</b>	-0.05	0.03	0.07	-0.03	-0.04	0.07
Q4_EE_R	-0.06	-0.05	-0.02	0.02	0.04	0.05	0.00	-0.03	0.01
Q8_EE	0.06	<b>0.16</b>	<b>0.10</b>	-0.05	-0.01	-0.06	-0.01	-0.03	0.00
Q32_EE	<b>0.15</b>	0.08	0.03	0.03	-0.06	0.00	0.03	0.08	0.01
Q41_EE	<b>0.16</b>	<b>0.14</b>	0.04	-0.03	0.07	0.05	<b>0.12</b>	<b>0.16</b>	0.06
Q47_EE	<b>0.11</b>	0.05	0.09	-0.03	-0.02	-0.02	0.02	0.07	-0.07
Q62_EE	0.00	<b>0.17</b>	0.07	-0.05	0.00	-0.06	0.00	0.03	-0.07
Q70_EE	0.06	0.05	0.00	<b>-0.11</b>	-0.06	-0.09	-0.01	<b>0.14</b>	-0.09
Q77_EE	-0.01	<b>0.17</b>	0.07	0.01	0.04	-0.03	-0.02	<b>0.12</b>	-0.01
Q24_EE	<b>0.18</b>	<b>0.17</b>	0.05	0.04	-0.01	0.03	0.07	<b>0.11</b>	0.08
Q36_EE	0.07	0.09	-0.03	-0.08	-0.09	-0.04	-0.02	<b>0.15</b>	-0.04
Q63_EE_R	0.06	0.01	-0.02	0.01	<b>-0.10</b>	0.00	-0.06	<b>0.19</b>	-0.07
Q2_RP	<b>1.00</b>	<b>0.11</b>	0.03	0.02	-0.10	-0.02	0.08	<b>0.10</b>	-0.01
Q9_RP	0.20	<b>1.00</b>	<b>0.11</b>	<b>0.10</b>	-0.04	-0.05	0.04	0.08	0.01
Q17_RP	0.18	0.30	<b>1.00</b>	-0.05	0.00	-0.04	-0.08	-0.03	0.04
Q48_RP_R	0.11	0.21	0.15	<b>1.00</b>	0.01	0.06	<b>0.12</b>	0.02	0.01
Q52_RP	0.10	0.20	0.43	0.26	<b>1.00</b>	-0.01	-0.04	-0.03	0.04
Q55_RP_R	0.16	0.16	0.35	0.29	0.49	<b>1.00</b>	<b>0.12</b>	0.01	0.01
Q64_RP	0.25	0.25	0.29	0.33	0.43	0.55	<b>1.00</b>	0.09	0.00
Q71_RP_R	0.16	0.15	0.09	0.10	0.13	0.16	0.22	<b>1.00</b>	-0.01
Q74_RP	0.19	0.26	0.48	0.27	0.61	0.52	0.49	0.16	<b>1.00</b>

### Appendix 3. Correlations and Discrepancies for Final Model.

Note: Correlations appear on and below the diagonal. Discrepancies between the actual correlation and that predicted by the final model appear above the diagonal.

#### Section 1. Correlations between Reporting System Items and Other Items

	Q2_RP	Q48_RP_R	Q55_RP_R	Q64_RP	Q71_RP_R
Q2_RP	<b>1.00</b>	-0.02	-0.08	0.01	0.08
Q48_RP_R	0.1161	<b>1.00</b>	0.01	0.03	0.00
Q55_RP_R	0.1666	0.3123	<b>1.00</b>	0.00	-0.04
Q64_RP	0.2565	0.3360	0.5493	<b>1.00</b>	0.03
Q71_RP_R	0.1711	0.1169	0.1655	0.2344	<b>1.00</b>
Q6_MI_R	0.2048	0.2176	0.4527	0.4045	0.1098
Q14_MI	0.2936	0.2265	0.4994	0.4373	0.251
Q17_RP	0.1808	0.1569	0.3350	0.2709	0.1084
Q30_MI	0.1781	0.2716	0.5143	0.5042	0.1523
Q51_MI	0.0803	0.1538	0.2786	0.2332	0.1071
Q52_RP	0.1305	0.2679	0.4840	0.4278	0.1455
Q74_RP	0.2117	0.2826	0.5392	0.4919	0.165
Q15_AS_R	0.0694	0.1279	0.3415	0.3141	0.0802
Q69_OC_R	0.2084	0.2848	0.4794	0.4587	0.1683
Q80_AS	0.1972	0.2588	0.5007	0.5083	0.1722
Q4_EE_R	0.0664	0.1762	0.3524	0.2946	0.0756
Q8_EE	0.2225	0.1496	0.3368	0.3775	0.1038
Q32_EE	0.3638	0.2714	0.4542	0.4752	0.241
Q43_EE	0.1897	0.1640	0.3032	0.3878	0.1667
Q73_OC	0.0772	0.2584	0.4121	0.3217	0.0848
Q47_EE	0.1383	0.0015	0.0276	0.0706	0.1034
Q62_EE	0.0318	0.0030	0.0247	0.0882	0.0638
Q70_EE	0.0983	-0.0448	-0.0255	0.0473	0.1659
Q39_MI	0.2029	0.1615	0.3860	0.3629	0.1372
Q42_MI_R	0.078	0.2569	0.3047	0.2364	0.0162
Q60_MI	0.1857	0.1298	0.3062	0.3007	0.2044
Q68_MI	0.2393	0.2285	0.4413	0.4654	0.2237
Q76_MI_R	0.22	0.1114	0.3217	0.2953	0.1585
Q81_MI	0.242	0.2606	0.4928	0.5191	0.2604
Q84_MI_R	0.269	0.2551	0.4833	0.4599	0.1677
Q10_OC_R	0.2138	0.2919	0.5127	0.4657	0.1235
Q11_OC	0.2402	0.2290	0.4683	0.4622	0.2414
Q18_OC_R	0.2871	0.2728	0.4119	0.4677	0.07
Q27_OC_R	0.2446	0.2427	0.4917	0.4541	0.1382
Q33_OC_R	0.1614	0.2763	0.5020	0.4521	0.0898
Q46_OC_R	0.2004	0.2248	0.4823	0.4638	0.1628
Q56_OC_R	0.1145	0.1856	0.3929	0.3541	0.1213
Q57_OC_R	0.1892	0.2501	0.5212	0.4353	0.1397

Q75_OC_R	0.1687	0.2762	0.5215	0.4938	0.1355
Q78_OC_R	0.1648	0.3228	0.5042	0.5014	0.1617
Q82_OC_R	0.1157	0.2048	0.1517	0.1132	0.1331
Q83_OC	0.2132	0.2524	0.5263	0.4891	0.0608
Q5_OC_R	0.1128	0.1225	0.2617	0.2250	0.1794
Q12_OC	0.2431	0.1497	0.1985	0.2847	0.208
Q20_OC	0.1973	0.0361	0.1843	0.1714	0.1263
Q38_OC	0.1381	0.0073	0.2245	0.2836	0.1957
Q50_OC	0.2047	0.1216	0.2991	0.3222	0.229
Q58_OC	0.2271	0.1054	0.2295	0.2634	0.0895
Q28_OC	0.1636	0.2384	0.458	0.4021	0.1301
Q65_OC_R	0.1052	0.1454	0.2156	0.104	-0.1054
Q66_OC	0.1528	0.2219	0.4696	0.4044	0.0588
Q72_OC	0.1529	0.1708	0.3578	0.294	0.0875

## Section 2. Correlations between Response & Feedback Items and Other Items

	Q6_MI_R	Q14_MI	Q17_RP	Q30_MI	Q51_MI	Q52_RP	Q74_RP
Q2_RP	0.02	<b>0.10</b>	0.02	-0.05	-0.05	-0.08	-0.01
Q48_RP_R	-0.01	-0.01	-0.05	-0.01	0.00	0.01	0.01
Q55_RP_R	0.05	0.07	-0.03	0.01	0.00	0.02	0.04
Q64_RP	0.00	0.01	-0.10	0.00	-0.05	-0.04	-0.01
Q71_RP_R	-0.04	0.09	-0.03	-0.04	0.00	-0.03	-0.02
Q6_MI_R	<b>1.00</b>	0.00	0.03	-0.06	0.03	-0.03	-0.01
Q14_MI	0.4526	<b>1.00</b>	0.03	-0.01	-0.01	-0.04	0.00
Q17_RP	0.4197	0.4433	<b>1.00</b>	-0.02	<b>0.16</b>	-0.02	-0.01
Q30_MI	0.4816	0.5594	0.4638	<b>1.00</b>	0.00	0.06	0.00
Q51_MI	0.3277	0.3046	0.4279	0.3773	<b>1.00</b>	0.06	0.00
Q52_RP	0.4688	0.4827	0.4258	0.6752	0.408	<b>1.00</b>	0.00
Q74_RP	0.5224	0.5617	0.4688	0.6644	0.3659	0.6075	<b>1.00</b>
Q15_AS_R	0.3166	0.3297	0.3155	0.3922	0.1601	0.3182	0.3358
Q69_OC_R	0.4221	0.3915	0.2866	0.4837	0.2636	0.4319	0.4165
Q80_AS	0.436	0.3892	0.2799	0.5232	0.2557	0.445	0.5091
Q4_EE_R	0.3964	0.3181	0.255	0.3709	0.1862	0.3988	0.3745
Q8_EE	0.3385	0.4328	0.4299	0.4891	0.2913	0.4288	0.4491
Q32_EE	0.4425	0.459	0.4158	0.5587	0.2818	0.4491	0.5345
Q43_EE	0.2114	0.2649	0.189	0.3708	0.099	0.3474	0.3429
Q73_OC	0.3428	0.2966	0.2099	0.3729	0.2573	0.3993	0.4586
Q47_EE	0.035	0.0749	0.1485	0.0588	0.0362	0.0362	-0.0067
Q62_EE	0.0718	0.0571	0.1254	-0.0029	0.0013	0.0675	0.0074
Q70_EE	0.0018	0.0416	0.066	0.0061	0.015	0.0251	-0.0108
Q39_MI	0.4334	0.3757	0.3057	0.5771	0.2255	0.5075	0.522
Q42_MI_R	0.3223	0.2347	0.2473	0.2483	0.1858	0.2924	0.2269
Q60_MI	0.3224	0.2609	0.2974	0.3549	0.2634	0.3194	0.3507
Q68_MI	0.4449	0.5162	0.5364	0.5392	0.3709	0.475	0.5655
Q76_MI_R	0.2976	0.2954	0.2143	0.2965	0.18	0.3269	0.3216
Q81_MI	0.4896	0.6145	0.5462	0.6112	0.3606	0.5914	0.7269
Q84_MI_R	0.5553	0.4447	0.3846	0.5449	0.2354	0.494	0.5274
Q10_OC_R	0.6052	0.5435	0.3927	0.6564	0.2864	0.5742	0.6145
Q11_OC	0.4415	0.5239	0.3956	0.5322	0.2251	0.4774	0.4886
Q18_OC_R	0.4279	0.4097	0.2715	0.456	0.229	0.4389	0.3961
Q27_OC_R	0.5168	0.5214	0.3513	0.58	0.2425	0.4982	0.5011
Q33_OC_R	0.5034	0.5281	0.3741	0.6116	0.2449	0.5438	0.5713
Q46_OC_R	0.4746	0.4768	0.3673	0.4658	0.2566	0.4357	0.4833
Q56_OC_R	0.358	0.2877	0.245	0.4155	0.1981	0.3832	0.4065
Q57_OC_R	0.5088	0.4938	0.2991	0.535	0.2389	0.4871	0.5215
Q75_OC_R	0.4291	0.449	0.3485	0.4818	0.238	0.4584	0.4857
Q78_OC_R	0.476	0.486	0.3522	0.5243	0.2828	0.4712	0.5199
Q82_OC_R	0.1558	0.1343	0.0889	0.1745	0.0942	0.2011	0.1661
Q83_OC	0.5354	0.5497	0.4015	0.6189	0.3256	0.6021	0.5915
Q5_OC_R	0.3491	0.3648	0.2635	0.2229	0.1576	0.2667	0.2736
Q12_OC	0.1366	0.2807	0.0886	0.2089	0.111	0.1624	0.2064

Q20_OC	0.1722	0.2955	0.2845	0.2136	0.1568	0.1774	0.2381
Q38_OC	0.2318	0.295	0.2149	0.351	0.0862	0.3008	0.2807
Q50_OC	0.3003	0.3935	0.3771	0.3077	0.2078	0.3334	0.3214
Q58_OC	0.2828	0.308	0.3277	0.3797	0.2292	0.311	0.3232
Q28_OC	0.4729	0.4256	0.3988	0.6552	0.3482	0.5511	0.5189
Q65_OC_R	0.2424	0.1704	0.1777	0.2256	0.1813	0.2537	0.2596
Q66_OC	0.4038	0.4816	0.3798	0.5956	0.2926	0.5571	0.579
Q72_OC	0.3454	0.3492	0.3135	0.4889	0.2579	0.4312	0.4407



### Section 3. Correlations between Accountability Items and Other Items

	Q15_AS_R	Q69_OC_R	Q80_AS
Q2_RP	-0.07	-0.01	-0.02
Q48_RP_R	-0.04	0.01	-0.01
Q55_RP_R	0.04	-0.01	0.02
Q64_RP	0.01	-0.03	0.02
Q71_RP_R	-0.03	-0.01	-0.01
Q6_MI_R	0.07	0.03	0.04
Q14_MI	0.07	-0.02	-0.02
Q17_RP	0.09	-0.07	-0.07
Q30_MI	0.08	-0.01	0.04
Q51_MI	-0.01	-0.01	-0.02
Q52_RP	0.03	-0.02	-0.01
Q74_RP	0.03	-0.07	0.03
Q15_AS_R	<b>1.00</b>	-0.07	0.00
Q69_OC_R	0.2877	<b>1.00</b>	0.03
Q80_AS	0.3528	0.5916	<b>1.00</b>
Q4_EE_R	0.2482	0.3384	0.2655
Q8_EE	0.2796	0.2974	0.3132
Q32_EE	0.3025	0.4492	0.4093
Q43_EE	0.2108	0.3823	0.4323
Q73_OC	0.2149	0.3034	0.3582
Q47_EE	-0.0645	-0.0104	-0.0099
Q62_EE	0.0432	-0.0236	0.072
Q70_EE	-0.0026	-0.1176	-0.0532
Q39_MI	0.2264	0.4383	0.4191
Q42_MI_R	0.2142	0.2245	0.2109
Q60_MI	0.2481	0.2537	0.3172
Q68_MI	0.3331	0.4261	0.4177
Q76_MI_R	0.2829	0.2834	0.3086
Q81_MI	0.3706	0.4771	0.561
Q84_MI_R	0.2962	0.5528	0.4889
Q10_OC_R	0.3704	0.564	0.5066
Q11_OC	0.3233	0.4468	0.4033
Q18_OC_R	0.3231	0.4869	0.416
Q27_OC_R	0.3581	0.4864	0.4747
Q33_OC_R	0.3602	0.504	0.461
Q46_OC_R	0.3932	0.411	0.3595
Q56_OC_R	0.2401	0.3874	0.3899
Q57_OC_R	0.3392	0.4661	0.4449
Q75_OC_R	0.3534	0.4819	0.4694
Q78_OC_R	0.2795	0.5053	0.4377
Q82_OC_R	0.1311	0.2078	0.1275
Q83_OC	0.3426	0.5259	0.5397
Q5_OC_R	0.1943	0.1958	0.2253
Q12_OC	0.1121	0.1801	0.2557

Q20_OC	0.1252	0.0792	0.1353
Q38_OC	0.2506	0.2344	0.2404
Q50_OC	0.2197	0.2732	0.2187
Q58_OC	0.2029	0.325	0.2519
Q28_OC	0.3281	0.4792	0.4705
Q65_OC_R	0.1291	0.1799	0.1505
Q66_OC	0.3082	0.4192	0.4072
Q72_OC	0.2593	0.3627	0.3669

## Section 4. Correlations between Pilots' Authority Items and Other Items

	Q4_EE_R	Q8_EE	Q32_EE	Q43_EE	Q73_OC
Q2_RP	-0.08	0.05	<b>0.15</b>	0.05	-0.07
Q48_RP_R	-0.01	-0.07	0.01	-0.02	0.07
Q55_RP_R	0.02	-0.05	-0.02	-0.02	0.07
Q64_RP	-0.04	-0.01	0.00	0.06	-0.02
Q71_RP_R	-0.05	-0.04	0.06	0.05	-0.04
Q6_MI_R	0.09	-0.02	0.00	-0.09	0.03
Q14_MI	-0.01	0.05	-0.01	-0.05	-0.04
Q17_RP	-0.02	<b>0.10</b>	0.01	-0.08	-0.07
Q30_MI	-0.01	0.04	0.01	0.00	-0.02
Q51_MI	-0.03	0.04	-0.03	<b>-0.11</b>	0.04
Q52_RP	0.05	0.01	-0.06	0.00	0.04
Q74_RP	0.00	0.01	-0.01	-0.02	0.07
Q15_AS_R	0.05	0.05	0.02	0.02	0.01
Q69_OC_R	0.02	-0.07	0.00	0.08	-0.02
Q80_AS	-0.05	-0.05	-0.04	<b>0.13</b>	0.04
Q4_EE_R	<b>1.00</b>	0.03	-0.02	-0.04	-0.03
Q8_EE	0.3018	<b>1.00</b>	0.10	-0.05	-0.03
Q32_EE	0.3161	0.4976	<b>1.00</b>	0.00	-0.03
Q43_EE	0.1866	0.2171	0.3276	<b>1.00</b>	-0.02
Q73_OC	0.2086	0.2498	0.3196	0.2147	<b>1.00</b>
Q47_EE	-0.0331	0.1276	0.0812	0.1283	-0.0077
Q62_EE	0.0025	0.0756	0.0792	0.0953	-0.049
Q70_EE	0.0097	0.0564	0.0457	0.0785	-0.0511
Q39_MI	0.3309	0.3496	0.4872	0.2966	0.3363
Q42_MI_R	0.2366	0.2373	0.2682	0.0866	0.2318
Q60_MI	0.2194	0.2934	0.4034	0.2722	0.1962
Q68_MI	0.3035	0.4205	0.5	0.3539	0.2726
Q76_MI_R	0.1809	0.2894	0.3576	0.2697	0.1977
Q81_MI	0.3737	0.4732	0.5745	0.3644	0.3389
Q84_MI_R	0.3402	0.3418	0.4332	0.3371	0.3665
Q10_OC_R	0.4345	0.3783	0.4854	0.3084	0.385
Q11_OC	0.3091	0.3855	0.4688	0.2955	0.2699
Q18_OC_R	0.2686	0.3048	0.4161	0.4612	0.3152
Q27_OC_R	0.3575	0.339	0.4823	0.3657	0.3407
Q33_OC_R	0.3858	0.3806	0.495	0.3475	0.3862
Q46_OC_R	0.3795	0.3067	0.4435	0.3311	0.3332
Q56_OC_R	0.2662	0.272	0.3354	0.2423	0.2178
Q57_OC_R	0.3694	0.2967	0.4432	0.2605	0.3973
Q75_OC_R	0.3548	0.3238	0.4414	0.3862	0.4243
Q78_OC_R	0.3596	0.3349	0.5099	0.3841	0.4086
Q82_OC_R	0.0935	0.1622	0.2358	0.1525	0.1425
Q83_OC	0.372	0.3622	0.4574	0.3646	0.406
Q5_OC_R	0.2805	0.22	0.2423	0.1168	0.1469
Q12_OC	0.0633	0.1845	0.2774	0.1993	0.0828

Q20_OC	0.1162	0.3027	0.2143	0.2112	0.1086
Q38_OC	0.2384	0.2182	0.331	0.2282	0.1728
Q50_OC	0.2464	0.3483	0.343	0.1817	0.1808
Q58_OC	0.2246	0.2481	0.3386	0.1972	0.1716
Q28_OC	0.3235	0.3613	0.4533	0.319	0.3972
Q65_OC_R	0.0971	0.1192	0.231	0.096	0.2787
Q66_OC	0.3687	0.4167	0.4624	0.3057	0.3791
Q72_OC	0.268	0.3069	0.3782	0.2636	0.3464

## Section 5. Correlations between Professionalism Items and Other Items

	Q47_EE	Q62_EE	Q70_EE
Q2_RP	<b>0.12</b>	0.01	0.08
Q48_RP_R	-0.02	-0.02	-0.07
Q55_RP_R	-0.01	-0.02	-0.07
Q64_RP	0.03	0.04	0.00
Q71_RP_R	0.09	0.05	<b>0.15</b>
Q6_MI_R	0.01	0.04	-0.03
Q14_MI	0.05	0.03	0.01
Q17_RP	<b>0.13</b>	<b>0.10</b>	0.04
Q30_MI	0.03	-0.04	-0.03
Q51_MI	0.02	-0.02	-0.01
Q52_RP	0.01	0.04	-0.01
Q74_RP	-0.04	-0.03	-0.05
Q15_AS_R	-0.05	0.06	0.02
Q69_OC_R	0.01	0.00	-0.09
Q80_AS	0.02	0.10	-0.02
Q4_EE_R	-0.07	-0.04	-0.03
Q8_EE	0.09	0.03	0.01
Q32_EE	0.03	0.02	-0.01
Q43_EE	0.09	0.06	0.04
Q73_OC	-0.04	-0.09	-0.09
Q47_EE	<b>1.00</b>	-0.02	0.00
Q62_EE	0.3624	<b>1.00</b>	0.01
Q70_EE	0.4203	0.4745	<b>1.00</b>
Q39_MI	0.0683	0.0526	-0.0231
Q42_MI_R	0.0482	0.0552	-0.0035
Q60_MI	0.2604	0.2068	0.2229
Q68_MI	0.1577	0.1236	0.1132
Q76_MI_R	0.0322	0.082	-0.005
Q81_MI	0.0946	0.0807	0.0675
Q84_MI_R	0.0394	0.0241	-0.0015
Q10_OC_R	-0.025	-0.0358	-0.044
Q11_OC	0.1312	0.0909	0.0743
Q18_OC_R	0.0611	0.0288	-0.0613
Q27_OC_R	-0.0107	0.0226	-0.0541
Q33_OC_R	-0.0215	-0.0306	-0.0744
Q46_OC_R	0.0091	0.0055	-0.0616
Q56_OC_R	-0.0323	0.0455	-0.0122
Q57_OC_R	-0.0019	-0.0362	-0.0209
Q75_OC_R	-0.0462	-0.0349	-0.0378
Q78_OC_R	0.0798	0.1021	0.013
Q82_OC_R	0.0733	0.0599	0.0314
Q83_OC	0.0122	0.0647	-0.0356
Q5_OC_R	0.0483	0.1044	0.0755
Q12_OC	0.1024	0.114	0.0966

Q20_OC	0.1463	0.2042	0.1632
Q38_OC	0.0733	0.1733	0.1327
Q50_OC	0.2455	0.2538	0.191
Q58_OC	0.2134	0.1728	0.1237
Q28_OC	0.0414	-0.02	-0.0886
Q65_OC_R	-0.0174	-0.073	-0.0939
Q66_OC	0.0054	0.0327	-0.0047
Q72_OC	0.0508	0.0106	-0.0181

## Section 6. Correlations between Chief Pilots Items and Other Items

	Q39_MI	Q42_MI_R	Q60_MI	Q68_MI	Q76_MI_R	Q81_MI	Q84_MI_R
Q2_RP	0.02	-0.02	0.05	0.03	0.10	0.01	0.07
Q48_RP_R	-0.07	<b>0.13</b>	-0.04	-0.03	-0.04	-0.03	0.01
Q55_RP_R	-0.02	0.08	-0.01	-0.02	0.05	-0.03	0.04
Q64_RP	-0.05	0.01	-0.01	0.00	0.02	0.00	0.01
Q71_RP_R	-0.01	-0.07	0.09	0.05	0.06	0.07	0.00
Q6_MI_R	0.02	0.09	0.01	-0.02	0.02	-0.03	<b>0.10</b>
Q14_MI	-0.06	-0.01	-0.07	0.03	0.00	0.06	-0.03
Q17_RP	-0.06	0.04	0.01	<b>0.12</b>	-0.04	0.07	-0.02
Q30_MI	0.07	-0.04	-0.04	-0.04	-0.05	-0.04	-0.02
Q51_MI	-0.06	0.03	0.04	0.05	-0.01	0.00	-0.08
Q52_RP	0.04	0.03	-0.04	-0.06	0.01	-0.01	-0.02
Q74_RP	0.02	-0.06	-0.04	-0.01	-0.02	0.08	-0.03
Q15_AS_R	-0.04	0.07	0.05	0.03	<b>0.11</b>	0.03	0.01
Q69_OC_R	0.02	-0.01	-0.07	-0.05	0.00	-0.06	0.09
Q80_AS	0.00	-0.02	0.00	-0.05	0.03	0.03	0.03
Q4_EE_R	0.03	0.07	-0.01	-0.04	-0.02	-0.02	0.01
Q8_EE	-0.01	0.04	0.02	0.01	0.05	0.02	-0.05
Q32_EE	0.05	0.02	0.07	0.00	0.06	0.01	-0.05
Q43_EE	0.00	-0.08	0.04	0.02	0.07	-0.01	0.01
Q73_OC	0.02	0.06	-0.04	-0.08	-0.01	-0.06	0.02
Q47_EE	0.00	0.01	<b>0.21</b>	0.08	-0.01	0.01	-0.03
Q62_EE	-0.02	0.02	<b>0.15</b>	0.04	0.03	-0.01	-0.05
Q70_EE	<b>-0.10</b>	-0.05	<b>0.16</b>	0.02	-0.06	-0.03	-0.09
Q39_MI	<b>1.00</b>	0.05	-0.01	-0.04	-0.06	-0.03	0.04
Q42_MI_R	0.2762	<b>1.00</b>	-0.01	-0.01	0.00	-0.02	-0.01
Q60_MI	0.3081	0.1682	<b>1.00</b>	0.05	0.08	0.00	-0.05
Q68_MI	0.427	0.2508	0.4107	<b>1.00</b>	0.05	0.09	-0.02
Q76_MI_R	0.2155	0.1532	0.2891	0.3639	<b>1.00</b>	-0.04	0.05
Q81_MI	0.4906	0.2734	0.405	0.6805	0.3095	<b>1.00</b>	-0.06
Q84_MI_R	0.4939	0.24	0.2974	0.4932	0.3518	0.5193	<b>1.00</b>
Q10_OC_R	0.5342	0.3012	0.2468	0.4712	0.2801	0.5736	0.6315
Q11_OC	0.439	0.2546	0.3417	0.5234	0.3202	0.5719	0.4749
Q18_OC_R	0.3534	0.2297	0.256	0.435	0.3368	0.4512	0.4884
Q27_OC_R	0.4414	0.2761	0.2569	0.4613	0.3316	0.4917	0.5786
Q33_OC_R	0.4848	0.2589	0.2288	0.4328	0.251	0.531	0.5715
Q46_OC_R	0.3961	0.2423	0.2641	0.4223	0.3271	0.4833	0.4829
Q56_OC_R	0.3316	0.19	0.2442	0.3764	0.223	0.448	0.4426
Q57_OC_R	0.5029	0.2942	0.2404	0.4013	0.2167	0.5061	0.5519
Q75_OC_R	0.4383	0.2655	0.2138	0.4457	0.3267	0.4941	0.5713
Q78_OC_R	0.4423	0.312	0.2997	0.5188	0.3393	0.5413	0.5388
Q82_OC_R	0.1837	0.2037	0.0701	0.1954	0.1346	0.1856	0.2108
Q83_OC	0.536	0.2589	0.2259	0.4769	0.3034	0.5869	0.5601
Q5_OC_R	0.2028	0.2116	0.1964	0.3052	0.1634	0.3231	0.26
Q12_OC	0.1793	0.0556	0.2523	0.2318	0.1802	0.2538	0.1859

Q20_OC	0.137	0.0263	0.194	0.2759	0.1574	0.2443	0.1891
Q38_OC	0.3178	0.1258	0.3065	0.3254	0.1432	0.3105	0.3075
Q50_OC	0.2379	0.124	0.3887	0.4109	0.153	0.4582	0.3353
Q58_OC	0.3012	0.1241	0.3086	0.3835	0.1626	0.4041	0.3027
Q28_OC	0.5283	0.2424	0.2406	0.4296	0.2343	0.4982	0.4984
Q65_OC_R	0.2371	0.1935	0.1351	0.1292	0.1073	0.1917	0.2307
Q66_OC	0.4956	0.2589	0.2733	0.5087	0.2409	0.5698	0.4171
Q72_OC	0.407	0.1218	0.2359	0.3334	0.1852	0.4208	0.399



## Section 7. Correlations between Safety Values Items and Other Items

	Q10_OC_R	Q11_OC	Q18_OC_R	Q27_OC_R	Q33_OC_R	Q46_OC_R	Q56_OC_R	Q57_OC_R	Q75_OC_R	Q78_OC_R	Q82_OC_R	Q83_OC
Q2_RP	-0.02	0.05	<b>0.10</b>	0.02	-0.06	0.01	-0.04	-0.02	-0.03	-0.04	0.04	-0.01
Q48_RP_R	0.00	-0.01	0.04	-0.03	-0.01	-0.02	-0.01	-0.01	0.02	0.06	<b>0.11</b>	-0.03
Q55_RP_R	0.00	0.05	-0.01	-0.01	0.00	0.05	0.05	0.06	0.07	0.04	-0.01	0.02
Q64_RP	-0.05	0.04	0.05	-0.05	-0.06	0.03	0.00	-0.03	0.04	0.03	-0.05	-0.02
Q71_RP_R	-0.07	0.08	-0.09	-0.05	-0.10	0.00	-0.01	-0.03	-0.03	-0.01	0.07	<b>-0.13</b>
Q6_MI_R	<b>0.12</b>	0.05	0.03	0.05	0.03	0.07	0.03	0.08	0.00	0.04	0.00	0.06
Q14_MI	0.03	<b>0.11</b>	0.00	0.03	0.03	0.05	-0.06	0.04	0.00	0.02	-0.03	0.05
Q17_RP	-0.04	0.04	-0.08	-0.07	-0.06	0.00	-0.05	-0.09	-0.04	-0.05	-0.05	-0.03
Q30_MI	0.05	0.04	-0.03	0.00	0.02	-0.04	0.01	0.00	-0.05	-0.02	-0.02	0.03
Q51_MI	-0.05	-0.05	-0.04	-0.08	-0.09	-0.03	-0.03	-0.06	-0.06	-0.02	-0.01	-0.01
Q52_RP	0.02	0.02	-0.01	-0.04	0.00	-0.03	0.01	-0.01	-0.03	-0.03	0.02	0.06
Q74_RP	0.02	0.00	-0.09	-0.07	-0.01	-0.02	0.01	-0.01	-0.04	-0.02	-0.02	0.01
Q15_AS_R	0.04	0.05	0.05	0.04	0.03	<b>0.11</b>	0.02	0.04	0.06	-0.02	0.02	0.02
Q69_OC_R	0.04	0.02	0.06	-0.02	-0.02	-0.03	0.03	-0.01	0.02	0.03	0.04	0.01
Q80_AS	-0.02	-0.03	-0.01	-0.03	-0.05	-0.08	0.04	-0.02	0.01	-0.04	-0.04	0.02
Q4_EE_R	0.07	0.01	-0.02	0.01	0.03	0.08	0.02	0.05	0.04	0.03	-0.02	0.02
Q8_EE	-0.05	0.04	-0.04	-0.07	-0.04	-0.05	-0.01	-0.08	-0.05	-0.05	0.03	-0.05
Q32_EE	-0.03	0.04	-0.01	-0.02	-0.02	0.01	-0.01	-0.02	-0.01	0.04	0.07	-0.05
Q43_EE	-0.04	0.01	<b>0.18</b>	0.03	0.00	0.04	0.01	-0.05	0.08	0.07	0.04	0.02
Q73_OC	0.02	-0.03	0.02	-0.02	0.02	0.02	-0.03	0.07	<b>0.10</b>	0.07	0.02	0.04
Q47_EE	-0.02	<b>0.14</b>	0.07	-0.01	-0.02	0.01	-0.03	0.00	-0.04	0.08	0.08	0.02
Q62_EE	-0.03	0.10	0.03	0.03	-0.02	0.01	0.05	-0.03	-0.03	<b>0.11</b>	0.06	0.07
Q70_EE	-0.04	0.08	-0.06	-0.05	-0.07	-0.06	-0.01	-0.01	-0.03	0.02	0.03	-0.03
Q39_MI	0.06	0.06	-0.03	-0.01	0.02	0.00	0.02	0.08	0.03	0.02	0.03	0.07
Q42_MI_R	0.04	0.04	0.02	0.02	0.00	0.02	0.01	0.06	0.03	0.07	<b>0.12</b>	0.00
Q60_MI	<b>-0.12</b>	0.05	-0.04	-0.09	<b>-0.13</b>	-0.04	0.00	-0.08	<b>-0.10</b>	-0.03	-0.05	<b>-0.13</b>
Q68_MI	-0.06	0.09	0.00	-0.05	-0.09	-0.03	0.02	-0.08	-0.02	0.03	0.02	-0.05
Q76_MI_R	-0.04	0.06	0.08	0.03	-0.06	0.06	0.01	-0.07	0.05	0.05	0.03	-0.01

Q81_MI	-0.03	0.08	-0.04	-0.09	-0.06	-0.02	0.04	-0.03	-0.03	0.00	-0.01	0.00
Q84_MI_R	<b>0.11</b>	0.05	0.07	0.08	0.06	0.05	0.09	0.09	<b>0.12</b>	0.07	0.04	0.05
Q10_OC_R	<b>1.00</b>	0.02	-0.03	0.01	0.06	-0.05	-0.02	0.02	-0.06	-0.05	0.01	0.00
Q11_OC	0.5624	<b>1.00</b>	0.01	0.02	-0.03	-0.03	-0.02	-0.05	-0.01	-0.03	-0.04	-0.02
Q18_OC_R	0.5032	0.4491	<b>1.00</b>	0.03	0.00	0.05	0.00	-0.04	0.04	0.04	-0.01	-0.02
Q27_OC_R	0.6451	0.5435	0.5465	<b>1.00</b>	0.03	0.01	0.02	0.02	-0.01	0.00	-0.01	0.01
Q33_OC_R	0.7105	0.4995	0.5221	0.6565	<b>1.00</b>	-0.02	0.01	0.01	-0.02	0.00	0.01	-0.02
Q46_OC_R	0.5105	0.4272	0.5034	0.5442	0.522	<b>1.00</b>	-0.03	0.01	0.03	0.03	-0.01	0.02
Q56_OC_R	0.4239	0.3386	0.3558	0.4462	0.4412	0.3458	<b>1.00</b>	0.05	-0.03	0.02	0.04	-0.05
Q57_OC_R	0.6125	0.4277	0.4421	0.5906	0.594	0.5083	0.4491	<b>1.00</b>	-0.01	-0.01	-0.03	0.00
Q75_OC_R	0.5179	0.459	0.5087	0.5481	0.5478	0.5165	0.3619	0.5037	<b>1.00</b>	0.08	0.05	-0.01
Q78_OC_R	0.5461	0.462	0.53	0.5764	0.5893	0.5377	0.4184	0.5217	0.606	<b>1.00</b>	0.02	-0.02
Q82_OC_R	0.2205	0.1303	0.1579	0.1936	0.2193	0.1709	0.1801	0.1577	0.2401	0.2135	<b>1.00</b>	-0.01
Q83_OC	0.6501	0.5125	0.5032	0.6379	0.6167	0.5623	0.3885	0.5835	0.5624	0.5664	0.203	<b>1.00</b>
Q5_OC_R	0.307	0.2702	0.2469	0.2253	0.2416	0.3199	0.2032	0.3077	0.2224	0.2662	0.1346	0.2601
Q12_OC	0.1164	0.2376	0.2055	0.1746	0.1042	0.1608	0.1368	0.212	0.1868	0.2094	0.1388	0.1292
Q20_OC	0.1621	0.1411	0.1579	0.1778	0.1584	0.2612	0.1458	0.1797	0.2174	0.1856	0.126	0.2217
Q38_OC	0.3102	0.2845	0.2599	0.3179	0.2426	0.2334	0.2026	0.3499	0.2811	0.291	0.1509	0.2999
Q50_OC	0.3444	0.3518	0.3038	0.2719	0.2527	0.2969	0.2771	0.2585	0.2466	0.313	0.1744	0.2999
Q58_OC	0.3103	0.3138	0.3003	0.2598	0.2484	0.281	0.2782	0.2672	0.2549	0.3286	0.1582	0.3099
Q28_OC	0.5781	0.4265	0.3841	0.5394	0.5802	0.4968	0.3426	0.4988	0.4862	0.4726	0.1257	0.5911
Q65_OC_R	0.2888	0.1651	0.1824	0.2237	0.2762	0.2097	0.0965	0.2928	0.2133	0.1695	0.1391	0.2674
Q66_OC	0.5885	0.4841	0.4591	0.5125	0.566	0.4317	0.4086	0.4965	0.4926	0.52	0.1986	0.598
Q72_OC	0.4305	0.3213	0.3401	0.3826	0.4525	0.4072	0.314	0.3725	0.401	0.4258	0.1275	0.4933

## Section 8. Correlations between Safety Fundamentals Items and Other Items

	Q5_OC_R	Q12_OC	Q20_OC	Q38_OC	Q50_OC	Q58_OC
Q2_RP	0.01	<b>0.16</b>	<b>0.11</b>	0.03	0.06	<b>0.10</b>
Q48_RP_R	-0.01	0.04	-0.08	<b>-0.12</b>	-0.06	-0.05
Q55_RP_R	0.03	0.00	-0.02	-0.01	-0.03	-0.05
Q64_RP	-0.01	0.09	-0.03	0.05	-0.01	-0.02
Q71_RP_R	0.09	<b>0.13</b>	0.05	<b>0.11</b>	<b>0.10</b>	-0.02
Q6_MI_R	<b>0.13</b>	-0.05	-0.02	0.00	-0.02	0.01
Q14_MI	<b>0.13</b>	0.08	0.09	0.06	0.05	0.02
Q17_RP	0.06	-0.08	<b>0.11</b>	0.01	0.09	0.08
Q30_MI	-0.05	-0.03	-0.03	0.07	-0.09	0.04
Q51_MI	0.00	-0.02	0.02	-0.07	-0.02	0.04
Q52_RP	0.01	-0.06	-0.05	0.04	-0.04	0.00
Q74_RP	0.00	-0.03	0.00	0.00	-0.07	-0.01
Q15_AS_R	0.06	0.00	0.01	<b>0.12</b>	0.03	0.04
Q69_OC_R	-0.01	0.00	<b>-0.10</b>	0.02	-0.03	0.07
Q80_AS	0.02	0.08	-0.04	0.03	-0.08	0.00
Q4_EE_R	<b>0.10</b>	-0.09	-0.04	0.06	-0.01	0.01
Q8_EE	0.01	0.01	<b>0.12</b>	0.01	0.05	-0.01
Q32_EE	-0.01	0.06	-0.01	0.07	-0.03	0.03
Q43_EE	-0.06	0.05	0.06	0.05	-0.07	-0.01
Q73_OC	-0.03	-0.07	-0.05	-0.01	-0.08	-0.05
Q47_EE	-0.07	0.00	0.04	-0.05	0.07	0.06
Q62_EE	-0.03	0.00	0.08	0.03	0.06	0.01
Q70_EE	-0.07	-0.03	0.03	-0.02	-0.03	-0.06
Q39_MI	-0.04	-0.03	-0.07	0.07	<b>-0.11</b>	0.01
Q42_MI_R	0.08	-0.06	-0.09	-0.01	-0.07	-0.04
Q60_MI	0.01	0.09	0.03	<b>0.12</b>	<b>0.12</b>	0.08
Q68_MI	0.03	0.00	0.04	0.04	0.01	0.05
Q76_MI_R	0.00	0.04	0.01	-0.02	-0.08	-0.04
Q81_MI	0.02	-0.01	-0.03	-0.01	0.01	0.03
Q84_MI_R	-0.01	-0.04	-0.04	0.04	-0.05	-0.02
Q10_OC_R	0.06	-0.10	-0.06	0.06	-0.02	0.01
Q11_OC	0.07	0.06	-0.04	0.08	0.06	0.07
Q18_OC_R	0.05	0.03	-0.02	0.05	0.01	0.05
Q27_OC_R	-0.01	-0.03	-0.03	0.07	-0.07	-0.03
Q33_OC_R	0.00	<b>-0.10</b>	-0.05	-0.01	<b>-0.10</b>	-0.05
Q46_OC_R	<b>0.11</b>	-0.02	0.08	0.02	-0.01	0.03
Q56_OC_R	0.04	-0.01	0.00	0.03	0.03	0.07
Q57_OC_R	0.09	0.02	-0.01	<b>0.12</b>	-0.06	0.00
Q75_OC_R	0.01	0.00	0.03	0.06	-0.07	-0.01
Q78_OC_R	0.04	0.02	-0.01	0.06	-0.01	0.05
Q82_OC_R	0.06	0.07	0.06	0.07	0.06	0.06
Q83_OC	0.02	-0.08	0.01	0.05	-0.05	0.01
Q5_OC_R	<b>1.00</b>	0.00	0.05	-0.05	0.04	-0.01
Q12_OC	0.1912	<b>1.00</b>	0.04	0.01	0.02	-0.02
Q20_OC	0.2461	0.2064	<b>1.00</b>	-0.06	-0.01	-0.04
Q38_OC	0.1796	0.2057	0.1384	<b>1.00</b>	0.00	-0.02
Q50_OC	0.3568	0.2992	0.2704	0.3258	<b>1.00</b>	0.02
Q58_OC	0.2627	0.2093	0.1961	0.2539	0.4146	<b>1.00</b>
Q28_OC	0.1769	0.1404	0.1762	0.2494	0.2665	0.2866
Q65_OC_R	0.0716	0.0197	0.0968	0.0148	0.1028	0.0965
Q66_OC	0.2184	0.1642	0.2472	0.2643	0.3235	0.3801
Q72_OC	0.1277	0.1539	0.2173	0.1895	0.2918	0.3161

## Section 9. Correlations between Going Beyond Compliance Items and Other Items

	Q28_OC	Q65_OC_R	Q66_OC	Q72_OC
Q2_RP	-0.02	0.02	-0.03	0.00
Q48_RP_R	0.01	0.04	-0.01	-0.02
Q55_RP_R	0.04	0.03	0.06	0.02
Q64_RP	-0.01	-0.08	-0.01	-0.05
Q71_RP_R	-0.02	<b>-0.18</b>	-0.10	-0.04
Q6_MI_R	0.01	0.03	-0.06	-0.03
Q14_MI	-0.06	-0.05	0.00	-0.05
Q17_RP	-0.02	-0.01	-0.04	-0.03
Q30_MI	0.08	-0.03	0.02	0.02
Q51_MI	0.03	0.04	-0.03	-0.01
Q52_RP	0.02	0.02	0.03	0.00
Q74_RP	-0.05	0.00	0.01	-0.02
Q15_AS_R	0.05	0.00	0.03	0.03
Q69_OC_R	0.03	-0.02	-0.03	-0.01
Q80_AS	0.03	-0.05	-0.04	0.00
Q4_EE_R	-0.01	-0.05	0.04	-0.01
Q8_EE	-0.03	-0.06	0.03	-0.02
Q32_EE	-0.03	0.01	-0.02	-0.02
Q43_EE	0.00	-0.05	-0.02	0.00
Q73_OC	0.06	<b>0.12</b>	0.04	0.07
Q47_EE	0.05	-0.01	0.02	0.06
Q62_EE	-0.01	-0.07	0.05	0.02
Q70_EE	-0.07	-0.09	0.01	-0.01
Q39_MI	<b>0.11</b>	0.05	0.08	0.06
Q42_MI_R	0.01	0.09	0.03	-0.07
Q60_MI	-0.08	-0.01	-0.05	-0.03
Q68_MI	-0.04	-0.08	0.04	-0.06
Q76_MI_R	-0.05	-0.02	-0.04	-0.05
Q81_MI	-0.03	-0.05	0.04	-0.02
Q84_MI_R	0.04	0.02	-0.04	0.02
Q10_OC_R	0.02	0.04	0.03	-0.03
Q11_OC	-0.03	-0.04	0.03	-0.06
Q18_OC_R	-0.07	-0.02	0.00	-0.03
Q27_OC_R	0.00	-0.02	-0.03	-0.06
Q33_OC_R	0.03	0.03	0.01	0.00
Q46_OC_R	0.02	0.00	-0.04	0.02
Q56_OC_R	-0.03	-0.07	0.03	0.00
Q57_OC_R	0.00	0.07	-0.01	-0.04
Q75_OC_R	-0.01	-0.01	0.00	0.00
Q78_OC_R	-0.04	-0.06	0.01	0.01
Q82_OC_R	-0.05	0.06	0.02	-0.02
Q83_OC	0.04	0.02	0.05	0.04
Q5_OC_R	-0.05	-0.03	-0.01	-0.06
Q12_OC	-0.05	-0.07	-0.03	-0.01

Q20_OC	-0.02	0.01	0.05	0.05
Q38_OC	0.02	-0.09	0.03	0.00
Q50_OC	-0.06	-0.05	0.00	0.02
Q58_OC	0.01	-0.03	<b>0.10</b>	0.09
Q28_OC	<b>1.00</b>	0.00	-0.03	0.04
Q65_OC_R	0.2564	<b>1.00</b>	0.00	0.00
Q66_OC	0.5406	0.258	<b>1.00</b>	0.02
Q72_OC	0.5074	0.2114	0.4887	<b>1.00</b>